

(1956) provided brief diagnoses of all families and genera recognized at the time. Major sources concerning the southern African regional gorgonian fauna, include Hickson (1900, 1904), Simpson (1910*a*, 1910*b*), Kükenthal (1919), Thomson (1911, 1917, 1923), Molander (1929), Broch (1939), Stiasny (1940), Tixier-Durivault (1954), and Velimirov (1971).

The octocoral classification system used here follows that of Bayer (1981), in which the gorgonians are allocated to 16 families within the order Alcyonacea (which also includes the soft corals); the traditionally accepted order Gorgonacea and the suborders Scleraxonia (gorgonians with free axial sclerites) and Holaxonia (gorgonians without free axial sclerites) are abandoned. These traditional divisions cannot be precisely defined due to the presence of intermediate forms, and thus no distinct boundaries between Alcyonacea and Gorgonacea, or Scleraxonia and Holaxonia can be maintained. Terminology in the present work conforms to Bayer *et al.* (1983). The notation (Lit.!) pertains to a reference containing a detailed synonymy.

The present work is concerned primarily with the gorgonians that occur in the coastal waters from the littoral to 200 m in depth. Most deeper water forms (those found between 200 m and 1 200 m in depth) are identified to genus only; this material is included in the text but the representative material is not described in detail or illustrated, although the genera are included in the key and species list. These include the genera *Acanthogorgia* Gray, 1857 (family Acanthogorgiidae); *Chrysogorgia* Duchassaing & Michelotti, 1864, *Radicipes* Stearns, 1883, and *Xenogorgia* Bayer & Muzik, 1976 (family Chrysogorgiidae); *Callogorgia* Gray, 1858, *Calyptraphora* Gray, 1866, *Primnooides* Wright & Studer, 1887, and *Primnoella* Gray, 1858 (family Primnoidae); and *Acanella* Gray, 1870, and *Keratoisis* Wright & Studer, 1869 (family Isidiidae).

MATERIALS AND METHODS

Recently acquired material was collected with the aid of SCUBA or dredge. Colonies were preserved in 70 per cent ethanol. Sclerites were disassociated from tissues with sodium hypochlorite. A Cambridge S200 scanning electron microscope was used to make micrographs of sclerites.

SYSTEMATIC ACCOUNT

KEY TO THE FAMILIES

- 1A. Colony composed of an outer cortex and an inner medulla. Medulla composed entirely of free but densely set sclerites **Anthothelidae**
- 1B. Colony with axial support composed of sclerites united by horny material and/or CaCO_3 , or entirely proteinous and permeated by varying amounts of non-spicular CaCO_3 , or totally calcified without sclerites or horn 2
- 2A. Axis jointed, composed of distinct and alternating nodes and internodes . 3
- 2B. Axis continuous and uniform, without alternating nodes and internodes . 4

- 3A. Nodes are short and proteinous, internodes are longer and composed of non-spicular CaCO_3 **Isididae**
- 3B. Axis composed of sclerites united by horny material and/or CaCO_3 **Melithaeidae**
- 4A. Axis with a central core that is hollow and cross-chambered 5
- 4B. Axis solid throughout 8
- 5A. Chambered core of axis surrounded by smooth sclerites bound together by sheaths of horn-like material **Keroeidae**
- 5B. Chambered core of axis surrounded by horn-like layers that may contain non-spicular CaCO_3 6
- 6A. Calyces permanent, with slender sclerites arranged into eight chevroned points **Acanthogorgiidae**
- 6B. Calyces without eight chevroned points; or permanent calyces absent 7
- 7A. Axis core narrow; axis cortex dense and hard with loculation generally lacking **Gorgoniidae**
- 7B. Axis core wide; axis cortex soft or wood-like with abundant loculation **Plexauridae**
- 8A. Sclerites include many double heads **Ellisellidae**
- 8B. No double heads are present 9
- 9A. Surface of axis longitudinally grooved **Primnoidae**
- 9B. Surface of axis smooth **Chrysogorgiidae**

Family Anthothelidae Broch, 1916

Medulla and cortex separated by a boundary of longitudinal canals. Solenia do not extensively penetrate medulla except sometimes distally. Axis composed of a medulla of loosely-bound calcite sclerites. Polyps monomorphic. Anthocodiae retractile. Polyp calyces usually present. Sclerites are needles, tuberculate spindles, radiates, or rods.

Eleven genera in three subfamilies from the Atlantic, southern Africa, and Indo-Pacific. Three genera in southern Africa.

Subfamily Anthothelinae Broch, 1916

Anthocodiae retractile into permanent cylindrical calyces. Cortical sclerites are mostly elongate and tuberculate spindles. Medullar sclerites of slender spindles.

Genus *Anthothela* Verrill, 1879

Anthothela Verrill, 1879: 199. Kükenthal, 1919: 43; 1924: 14 (Lit.!).

Diagnosis

Colonies composed of few slender, often tangled or sinuous branches, with or without a main basal stem. Polyps widely spaced (5–10 mm), scattered on all

sides of round branches, not in definite rows. Conical to cylindrical permanent calyces with anthocodiae usually preserved partly exserted. Stems round; a thin cortex surrounds a thick medulla.

Two or three species of the northern Atlantic, South Africa, and possibly the Pacific coast of central America.

Type species. Briareum grandiflorum Sars, 1856; north Atlantic.

Anthothela parviflora Thomson, 1917

Figs 2–3, 4A–D

Anthothela parviflora Thomson, 1917: 3, pl. 2 (fig. 5), pl. 5 (fig. 4).

Material

SAM–H1153, herein designated lectotype, off Cape Recife, eastern Cape Province (34°27'S 25°42'45"E), 468 m, 14 November 1898, several fragmented colonies; dredge, S.S. *Pieter Faure* survey, PF 655. SAM–H3653, off Sandy Point, Transkei (32°41,2'S 28°43,9'E), 480–490 m, 14 July 1984, 4 whole colonies, dredge, G. C. Williams, R.V. *Meiring Naude*.

Description

Colonies examined are 50–90 mm in length. Most colonies have two or three branches arising from a short (<20 mm) main stem. The main branches have few or no further lateral branches, and are sinuous or tortuous in appearance. The main stem and lowermost portions of the branches are devoid of polyps. Polyps restricted to distal half of branches, widely spaced (5–8 mm apart), arranged on all sides of branches. Calyces elongate conical to cylindrical, with more-or-less truncate apices (<5 mm long). Eight longitudinal grooves conspicuous on external surface of calyces. Anthocodia often preserved partially exserted; with numerous needle-like spindles or a few stout rods (0,04–0,35 mm long), arrangement not determined. Cortex with oval to elongate spindles (0,11–0,35 mm in length), sparsely to densely tuberculate, some spindles club-shaped. Medulla with slender spindles (0,17–0,43 mm long), sparsely tuberculate to somewhat thorny or weakly branched.

Distribution

Known only from the south coast of South Africa—Cape Recife (Algoa Bay) and central Transkei; 183–490 m in depth; apparently endemic to southern Africa (Williams in press *a*). Type locality is the Algoa Bay region.

Remarks

Thomson (1917: 4–5) differentiated in detail between *A. grandiflora* and *A. parviflora*. According to him, *A. grandiflora* is luxuriantly bushy with anastomosing branches but without a principal stem. In *A. parviflora*, the branching is very sparse, anastomosis does not take place, and the colony arises from a single

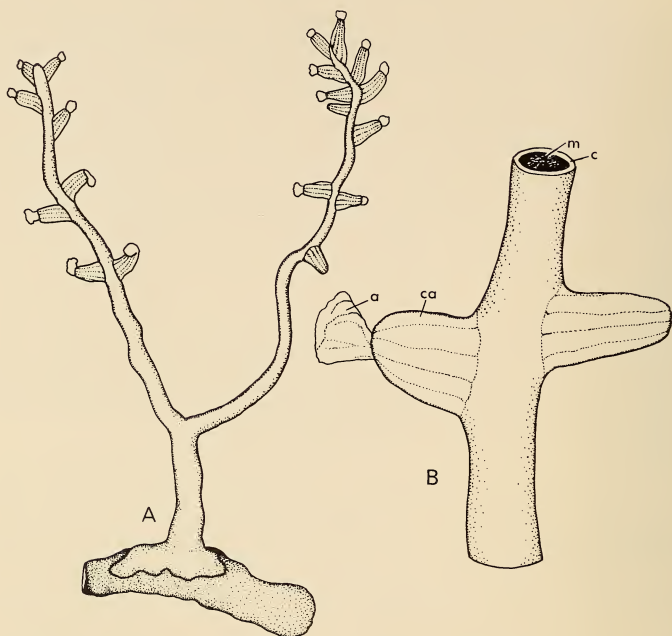


Fig. 2. *Anthothela parviflora* Thomson, 1917. A. Entire colony on a dead coral fragment, total length of colony 50 mm. B. Detail of a branch in transverse section, with two polyps; length of figure 10 mm. Abbreviations: a—anthocodia, c—cortex, ca—calyx, m—medulla.

basal stem. The characters that distinguish *A. grandiflora*, as well as details of its distribution, can be found in the following works: Sars (1856), Kükenthal (1919: 43, fig. 17), Verrill (1922), Thomson (1927: 16), and Grasshoff (1982a, map 1; 1982b: 942, fig. 4).

Subfamily Spongiodermatinae Aurivillius, 1931

Calyces present or absent. Cortical sclerites with capstans or radiates. Medullar sclerites are rods that are often branched or spiny.

Genus *Homophyton* Gray, 1866

Solanderia Mobius, 1861: 3 (preoccupied by *Solanderia* Duchassaing & Michelin, 1846: 218).

Homophyton Gray, 1866: 27.

Spongioderma Kolliker, 1870: 14. Kükenthal, 1919: 89; 1924: 34 (Lit!).

Diagnosis

Colonies elongate, unbranched or with few dichotomous branches arising from a single basal stem. Calyces prominent or absent. Single ring of longitudinal canals between cortex and medulla. Cortex in one layer, composed primarily of globose radiates. Medulla composed of stout rods that are somewhat branched or spiny.

A monotypic genus restricted to southern Africa.

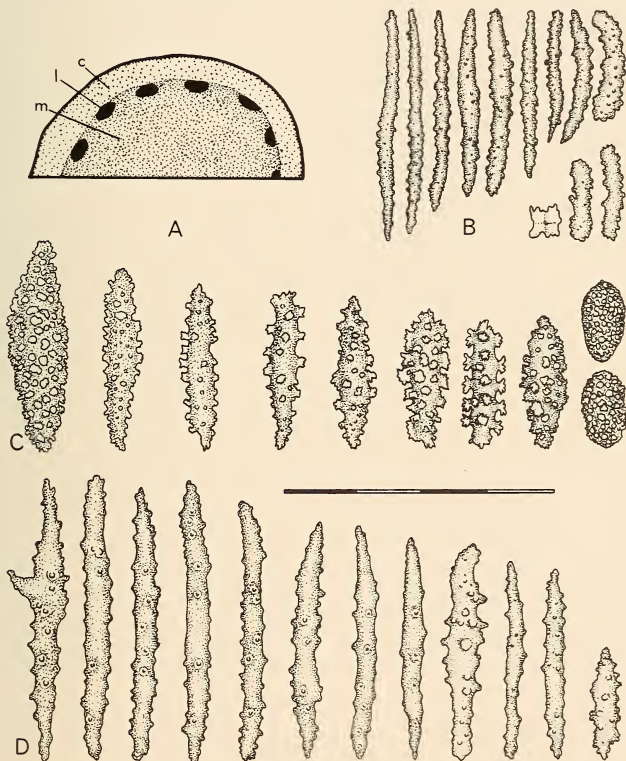


Fig. 3. *Anthothela parviflora* Thomson, 1917. A. Half transverse section through base of colony showing internal structure; total diameter 3 mm. Abbreviations: c—cortex, l—longitudinal canal, m—medulla. B. Anthocodial sclerites. C. Sclerites from the calyx and cortex.

D. Sclerites from the medulla. Scale bar = 0,4 mm.

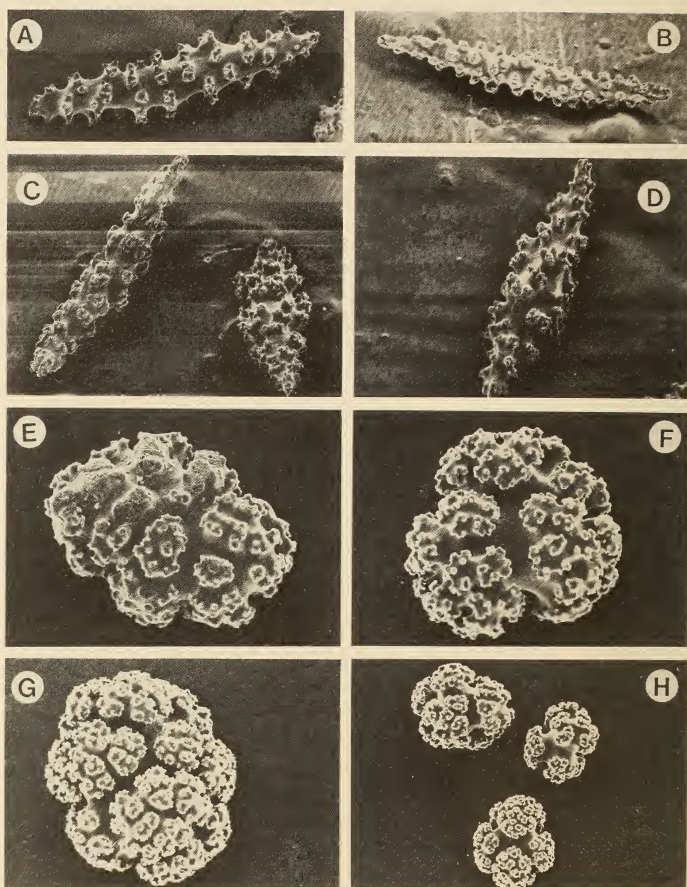


Fig. 4. Scanning electron micrographs. A-D. *Anthothela parviflora* Thomson, 1917, sclerites of calyx and cortex. A. 0,130 mm. B. 0,210 mm. C. Two sclerites 0,080-0,145 mm. D. 0,125 mm. E-H. *Homophyton verrucosum* (Möbius, 1861), coenenchymal sclerites. E. 0,075 mm. F. 0,055 mm. G. 0,100 mm. H. Three sclerites, 0,040-0,055 mm.

Type species. Solanderia verrucosa Möbius, 1861; South Africa.

Homophyton verrucosum (Möbius, 1861)

Figs 4E–H, 5–6

Solanderia verrucosa Möbius, 1861: 3. Kolliker, 1865: 141.

Homophyton Gattyiae Gray, 1866: 27; 1869: 96.

Spongioderma verrucosa Kolliker, 1871: 11. Kükenthal, 1919: 91, figs 39–43, pl. 3 (fig. 8); 1924: 34, figs 26–28. Molander, 1929: 5. Stiasny, 1940: 13, pl. 1 (figs 1–7). Tixier-Durivault, 1954: 529. Day *et al.*, 1970: 16.

Spongioderma verrucosum: Hickson, 1900: 78. Thomson, 1911: 874.

Spongioderma chuni Kükenthal, 1908: 18; 1919: 94, pl. 3 (fig. 9); 1924: 36. Molander, 1929: 6. Stiasny, 1940: 16. Tixier-Durivault, 1954: 529; 1960: 362.

Homophyton: Bayer, 1981: 910.

Homophyton verrucosum Williams, 1989: 142; in press c.

Material

SAM–H3645, off East London (33°02.3'S 27°55.9'E), 30–35 m, 16 July 1984, 2 colonies, dredge. G. C. Williams, R.V. *Meiring Naude*. SAM–H3341, Algoa Bay (33°50'S 25°40'E), 12 m, 16 May 1984, 2 colonies, SCUBA, G. C. Williams.

Description

Colonies examined are up to 420 mm in length and 5–15 mm in width. Colonies rarely unbranched and whip-like; commonly dichotomously branched from a single basal stem that is 60–120 mm in length. Base of colony up to 15 mm in diameter. Amount of branching variable, sparse to profuse. Branches elongate, finger-like tapering distally. Polyps cover entire colony except the basal holdfast region. Calyces prominent and conical-truncate to cylindrical (up to 3 mm long), or low and rounded, or absent (being retracted into branches). Cortex composed of densely set globular to ovoid radiates, small triradiates, and tuberculate spheroids, 0.07–0.22 mm long. Medulla composed of densely-set rods 0.13–0.18 mm long, which are somewhat branched or sparsely spiny. Colour yellow, pinkish-white, red-orange, or deep wine-red; calyces whitish, yellow, or wine-red. Colonies commonly bicoloured, i.e. red-orange with yellow calyces; or monochromatic, i.e. entirely whitish, yellow, or wine-red.

Distribution

Apparently restricted to the south and east coasts of southern Africa, known definitely from Cape Agulhas to Sodwana Bay, Natal; intertidal to depth of 168 m (Williams in press a). The species was also listed without descriptions or figures from False Bay, western Cape Province by Day *et al.* (1970: 16), and Inhaca Island, southern Mozambique by Tixier-Durivault (1960: 362). This is a variable and locally common species, often found on or adjacent to rocky reefs in depressions or gullies filled with sand. Specific type locality not known.

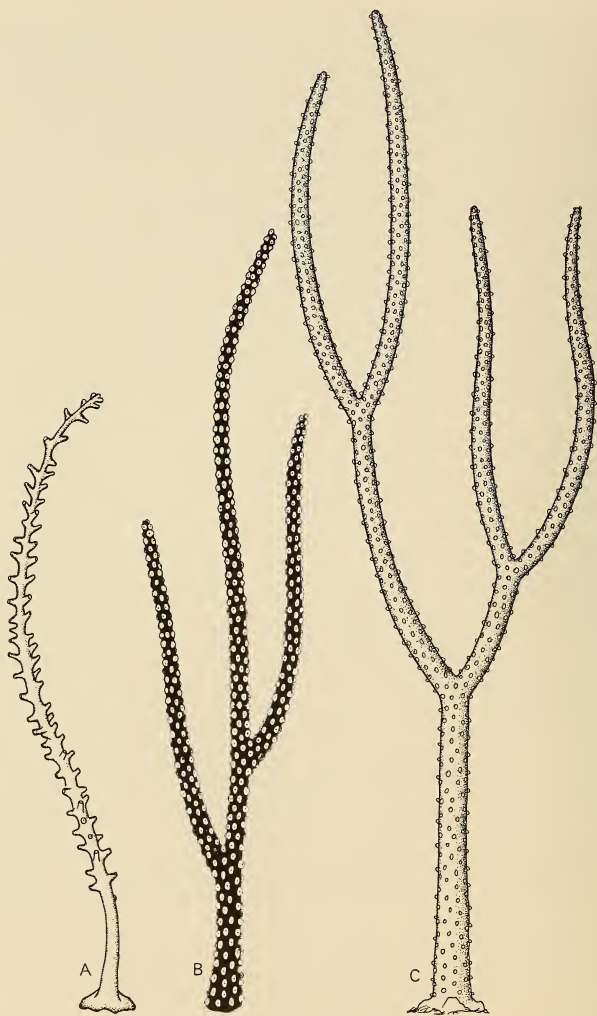


Fig. 5. *Homophyton verrucosum* (Möbius, 1861). Three entire colonies. A. A colony from 100 m depth off East London, length 200 mm. B. A colony from 30 m depth off East London, length 230 mm. C. A colony from 12 m depth in Algoa Bay, length 460 mm.

Remarks

Kükenthal (1908) described *Spongioderma chuni* from uniformly wine-red colonies from Algoa Bay. The species was retained by Molander (1929), Stiasny (1940), and Tixier-Durivault (1960). Comparative examination of many colonies of this species from throughout its range has shown the only consistent difference between Kükenthal's species and *H. verrucosum* to be colour. No other morphological features are distinctive, including sclerite characteristics. I therefore consider Kükenthal's species to be conspecific with *H. verrucosum*.

Solanderia of Möbius, 1861, is preoccupied by *Solanderia* Duchassaing & Michelin, 1846. Since the two are synonymous, the name *Homophyton* Gray, 1866, has priority over *Spongioderma* Kölliker, 1871.

Homophyton verrucosum is a highly variable species in regards to colour, growth form, calyx development, and sclerite size and shape. The monochromatic wine-red form seems to be restricted to the Algoa Bay region. In the East London area, an orange form with yellow calyces is commonly encountered. Whitish, pinkish, or yellowish forms with prominent conical to cylindrical, non-retractile calyces (up to 3 mm) are infrequently observed from East London to Natal. The Algoa Bay and East London forms have retractile calyces that are most often preserved as low rounded or conical-truncate protuberances (<2 mm) on the colony surface, although a few calyces may be totally retracted and are preserved flush with the colony surface. The cortical sclerites vary in shape and size from colony to colony. Some colonies have narrower elliptic radiates up to 0.22 mm in length, whereas others have more spheroid radiates that do not exceed 0.18 mm in diameter.

Most specimens of *Homophyton verrucosum* possess varying amounts of encrusting sponge (an unidentified species of Demospongiae). The sponge is thin, greyish-white, and may completely cover the external surface of the octocoral, except for the conical calyces that remain exposed. The sponge spicules are numerous styles (long needle-like forms) with a few anisochelas (small hook-like forms).

In addition to the conspicuous ring of longitudinal canals that separate the cortex and medulla, several other canals may be dispersed throughout the cortex. In some specimens, these additional canals may appear to form a second concentric ring between the cortex and medulla, as described by Kükenthal (1924: 34). These rings are exclusive of the ring of small canals that is sometimes apparent directly beneath the external surface (Fig. 5A).

Homophyton verrucosum is distinguished by the presence of globular radiates and tuberculate spheroids (0.07–0.22 mm in diameter) in the calyces and coenenchyme.

The superficial resemblances between *Homophyton verrucosum* and *Ideogorgia capensis* (family Keroeidiidae) deserve mention. The two species are presently placed in different families (and would even be placed in separate orders if the formerly accepted classification system (Bayer 1956) was used). The sclerites of both the cortex and medulla are remarkably similar and the growth

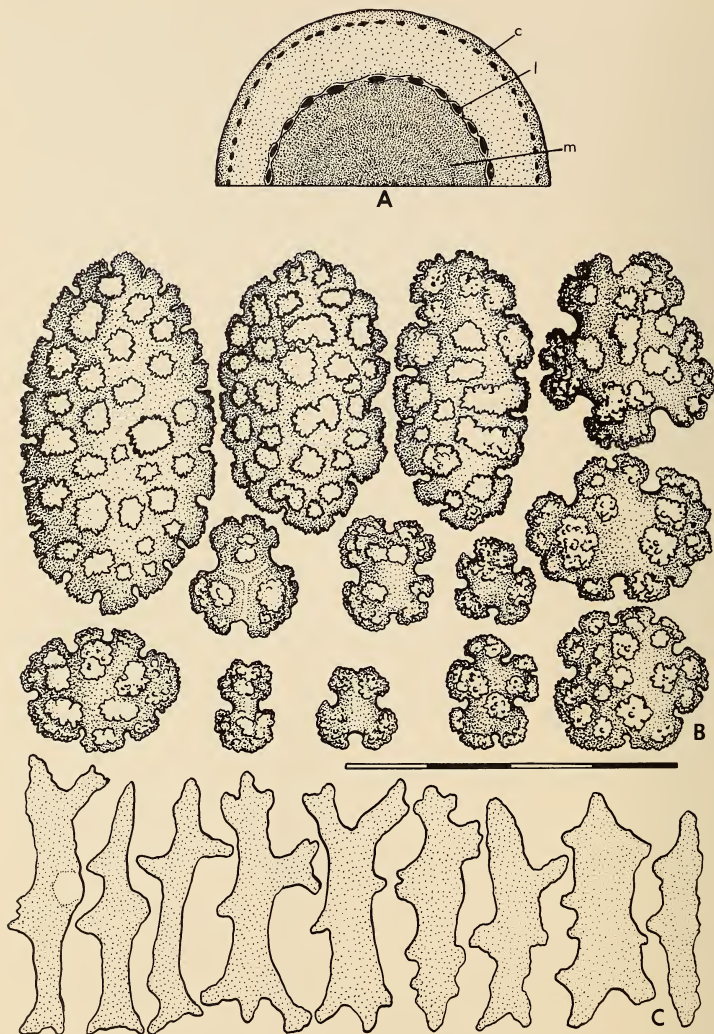


Fig. 6. *Homophyton verrucosum* (Möbius, 1861). A. Half transverse section through the basal portion of a colony, showing internal structure; total diameter 12 mm. Abbreviations: c—cortex, l—longitudinal canal, m—medulla. B. Sclerites from cortex. C. Sclerites from medulla. Scale bar = 0.2 mm.

forms and colony colour are also somewhat similar. However, the axis of *Ideogorgia* possesses a chambered central chord surrounded by a layer of smooth sclerites, which is bound together by horn-like sheaths. *Homophyton*, on the other hand, lacks a central chord in the axis but has a thick medulla of uniform consistency. Examination of many specimens of *Homophyton* at a variety of levels within the colonies has revealed no trace of a central chord. Because of this, the two species are retained provisionally in separate families despite their striking superficial similarities.

Genus *Diodogorgia* Kükenthal, 1919

Diodogorgia Kükenthal, 1919: 96; 1924: 36.

Diagnosis

Colonies branched and tree-like with capitate branch tips, or unbranched and capitate. Cortex organized into a thin outer layer and a thick, non-vesicular inner layer separated by a plexus of narrow canals. Medulla separated from cortex by a layer of wide canals. Outer cortex with small capstans and tri-radiates, inner cortex with stout tuberculated spindles, medulla with sparsely thorny spindles and rods that are sometimes branched. Colony colour reddish, incorporated in sclerites of the cortex.

Three species from the Gulf of Mexico, West Indies, and South Africa.

Type species. Diodogorgia ceratosa Kükenthal, 1919: 97; Gulf of Mexico.

Diodogorgia capensis (Thomson, 1911) comb. nov.

Figs 7-8, 9A-D

Suberia capensis Thomson, 1911: 871, pl. 43 (fig. 4), pl. 45 (fig. 4a-c). Kükenthal, 1919: 89; 1924: 34. Stiasny, 1940: 12.

Material

SAM-H584, off Hood Point near East London (33°05'S 27°50'E), 90 m, 15 July 1901, 2 partial colonies, dredge, S.S. *Pieter Faure* survey, PF 13056. SAM-H3590, off Port Grosvenor, Transkei (31°25'6"S 29°56'0"E), 80-84 m, August 1981, 2 colonies, dredge, R. N. Kilburn, R.V. *Meiring Naude*.

Description

Colonies examined are 25-30 mm in length. Colonies are unbranched, slightly clavate or markedly capitate. The polyp-bearing capitulum may arise from a narrower basal stalk, or polyps may be evenly distributed throughout most of digitiform colonies. Polyps generally with low rounded or truncate calyces, 2 mm in diameter. Calyces may retract completely into polyparium. Sclerites of outer cortex are triradiates and capstan radiates, 0,05-0,15 mm in length. Inner cortex sclerites are robust tuberculate spindles, 0,30-0,50 mm in length. The medulla possesses spindles and rods, 0,15-0,50 mm in length, which are weakly branched or sparsely thorny. The outer cortex is a thin dense layer, 0,25 mm in thickness. The inner cortex is less dense, but without large vesicles.

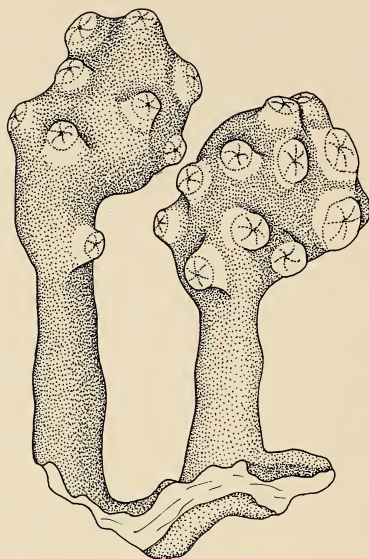


Fig. 7. *Diodogorgia capensis* (Thomson, 1911). Two entire colonies, 25 mm and 20 mm in length.

A plexus of narrow canals separates the inner and outer layers of the cortex. The longitudinal canals that separate the cortex and medulla are conspicuous, 0,05 mm in diameter. Colony colour uniform deep rust-orange to wine-red.

Distribution

Known only from the southern coast of South Africa from East London to northern Transkei; 80–90 m in depth; apparently endemic to southern Africa. Type locality is Cape Morgan, border of Cape Province and Transkei.

Remarks

Bayer (1955: 208) showed that the genus *Suberia* Studer, 1879, is a junior synonym of *Semperina* Kölliker, 1870. *Diodogorgia* has radiates in the outer cortex, whereas *Semperina* does not contain radiates in the cortex. *Diodogorgia* is therefore the correct generic designation.

The southern African species can be placed in the genus *Diodogorgia* on the basis of capitate terminal tips of the colony, organization of the cortex into a thin outer layer, a thick inner layer without large vesicles and separated by a plexus of thin canals, radiates in the outer cortex, stout tuberculated spindles in

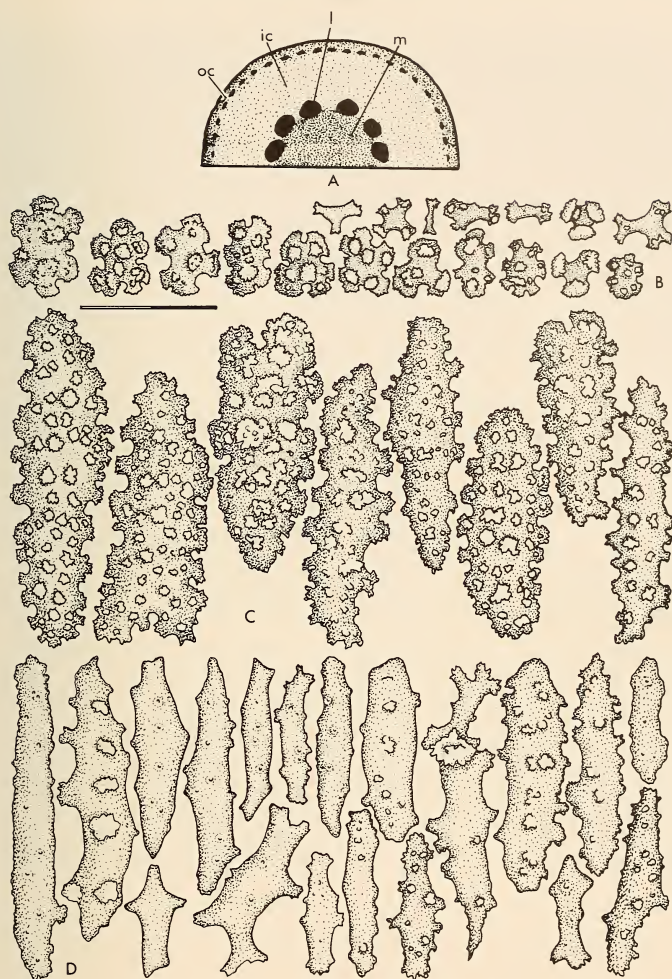


Fig. 8. *Diodogorgia capensis* (Thomson, 1911). A. Half transverse section through basal region showing internal structure, total diameter 4 mm. Abbreviations: ic—inner cortex, l—longitudinal canal, m—medulla, oc—outer cortex. B. Sclerites from the outer cortex. C. Sclerites from the inner cortex. D. Sclerites from the medulla. Scale bar = 0.2 mm.

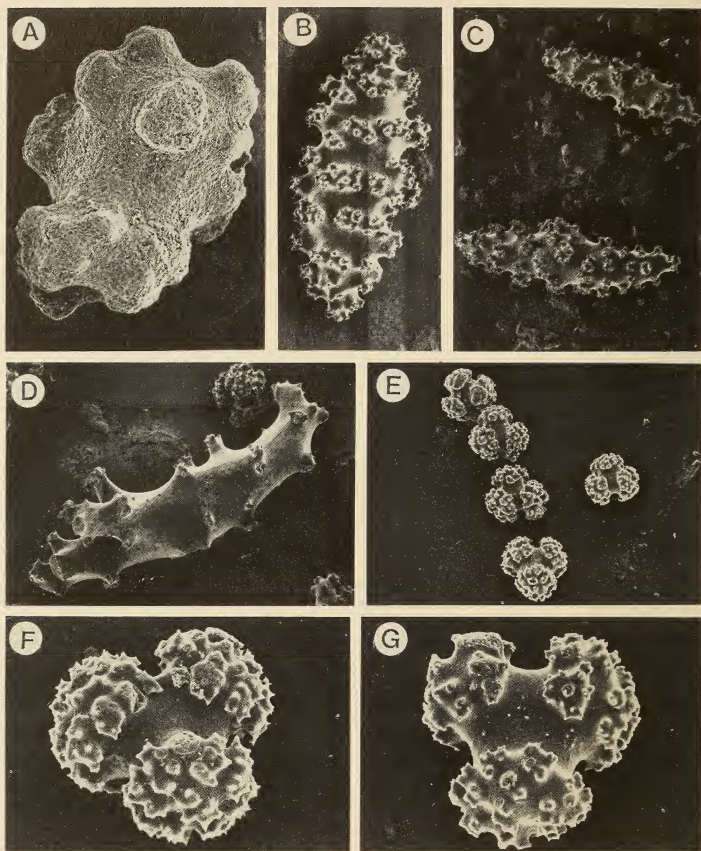


Fig. 9. Scanning electron micrographs. A-D. *Diodogorgia capensis* (Thomson, 1911). A. Sclerite from the outer cortex 0,088 mm. B. Sclerite from the inner cortex 0,350 mm. C. Two sclerites from the inner cortex 0,30-0,40 mm. D. Sclerite from the medulla, 0,30 mm. E-G. *Ideogorgia capensis* (Simpson, 1910), coenenchymal sclerites. E. Five sclerites, 0,035-0,040 mm. F. 0,040 mm. G. 0,060 mm.

the inner cortex, sparsely thorny spindles and rods in the medulla, and reddish colony due to permanent coloration of sclerites of the outer cortex.

Diodogorgia capensis is distinguished from the other two species of the genus, *D. ceratosa* Kükenthal, 1919, and *D. cervicornis* Kükenthal, 1919, by an unbranched growth form, the latter two species being bushy or arborescent.

The present work represents a new record for the genus *Diodogorgia* in southern Africa.

Family **Melithaeidae** Gray, 1870

Axis composed of internodes of fused sclerites and nodes of horny material with sclerites. Branches arise from the nodes. Polyps monomorphic. Coenenchymal sclerites diverse, conspicuously sculptured, spindles, clubs, foliates, and spheroids. Axial sclerites are smooth rods often with median protuberances forming a transverse ring.

Five genera of Indo-Pacific distribution. Only one of these (*Acabaria* Gray, 1859) is considered valid, whereas the remaining four, *Melithaea* Milne Edwards & Haime, 1857 (= *Melitella*, *Melitodes*, *Biotulata*), *Mopsella* Gray, 1857, *Clathraria* Gray, 1859, and *Wrightella* Gray, 1870, are considered nominal (and probably do not even merit subgeneric status since they all have more-or-less the same sclerite forms) by Bayer (1981: 917) and Van Ofwegen (1987: 6). Classification of the family is in great need of revision.

Genus *Acabaria* Gray, 1859

Acabaria Gray, 1859: 484; 1868: 445. Ridley, 1884: 361, 363. Kükenthal, 1919: 174; 1924: 73 (Lit!). Bayer, 1956: F200. Van Ofwegen, 1987: 5.

Anicella Gray, 1868: 445.

Psilacabaria Ridley, 1884: 361, 363.

Melitodes (part.) Wright & Studer, 1889: 171.

Diagnosis

Sclerites of the coenenchyme are large thorny spindles, rods, and some capstans, with thorn clubs or leaf clubs also present.

An Indo-Pacific genus of at least 20 species.

Type species. *Acabaria divaricata* Gray, 1859; Australia.

Acabaria rubra (Esper, 1798) comb. nov.

Figs 1A–B, 10–13

Isis dichotoma cortice rubro Esper, 1798: 6, pl. 1 (figs 4–5).

Melitodes dichotoma (non Pallas, 1766) Hickson, 1900: 80, pls 1–2, 6 (fig. B). Thomson, 1911: 877.

Melitodes africana Kükenthal, 1908: 194; 1919: 146, text-figs 69–74, pl. 31 (fig. 10), pl. 36 (fig. 30); 1924: 60, figs 45, 46. Molander, 1929: 6. Broch, 1939: 15, figs 10–15. Day *et al.*, 1970: 16.

Melitodes esperi (non Wright & Studer, 1889) Thomson, 1911: 874, fig. 167.

Melitodes nodosa (non Wright & Studer, 1889) Thomson, 1911: 876.

Mopsella saurii (non Thomson, 1917) Broch, 1939: 20, figs 16–21.

Mopsella dichotoma (non Pallas, 1766) Day *et al.*, 1970: 16.

Wrightella coccinea (non Ellis & Solander, 1786) Day *et al.*, 1970: 16. Day, 1974: 34.

Wrightella: Branch & Branch, 1981: 151, fig. 191.

Material

SAM-H3327, Algoa Bay, eastern Cape Province (33°50'S 25°40'E), 15 m, 17 May 1984, 1 colony, SCUBA, G. C. Williams. SAM-H3718, wreck of the *Transvaal*, False Bay, south-western Cape Province (34°15'S 18°35'E), 30 m, 1983, 3 colonies, SCUBA, P. Zoutendyk. SAM-H3874, Hout Bay, Cape of Good Hope Peninsula (34°04'S 18°20'E), 30 m, 27 April 1985, several colonies; SCUBA, G. C. Williams.

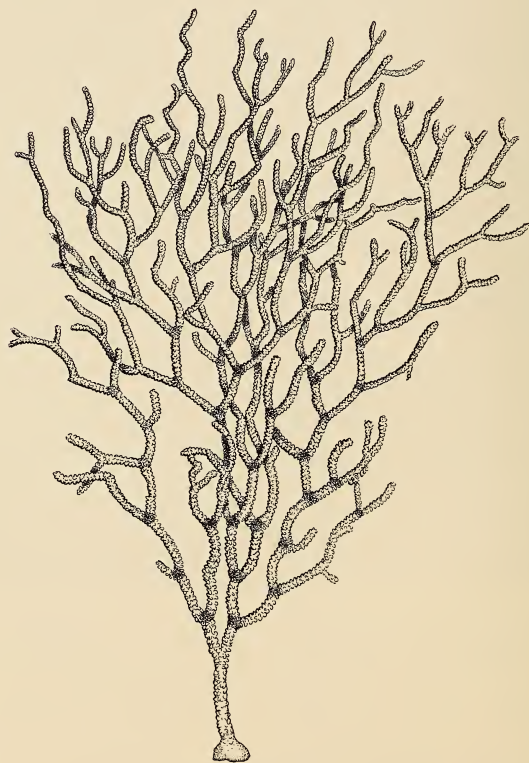


Fig. 10. *Acabaria rubra* (Esper, 1798). An entire colony, 200 mm in length.

Description

The colonies examined vary from 25 mm to 200 mm in length. Growth form bushy, planar or multiplanar. Branching dichotomous, intricate. Anastomosis frequent. Internodes mostly 8–20 mm in length. Colonies with relatively brittle branches. Polyps arranged on all sides of branches in most colonies. Some colonies may have branches with opposite bare tracts perpendicular to the plane of the colony. In most colonies, the polyps are crowded and cover almost the entire surface of the colony, virtually extending to the base near the holdfast. Retracted polyps form conspicuous calyces that are either conical or hemispherical, usually 1.0–1.5 mm in diameter. Anthocodia with crown and points of mostly strongly tuberculated spindles and clubbed spindles, 0.08–0.2 mm long. The calyx is densely set with spindles clubs and leaf clubs, 0.12–0.26 mm in length. These have prominent tubercles. The coenenchyme covering the branches is densely set with spindles, clubs, leaf clubs, and unilaterally foliate spheroids, 0.12–0.25 mm long. These too are conspicuously tuberculated. Colony colour variable: red, orange, yellow, or white; orange with yellow calyces or anthocodiae also common.

Distribution

The species is known from Melkbos on the Cape west coast to East London, eastern Cape Province; intertidal to 159 m in depth (Williams in press a). Type locality Cape of Good Hope.

Remarks

This species is herein allocated to the genus *Acabaria* because it has sclerites in the coenenchyme that are mainly long spindles, with thorn clubs and leaf clubs also present. Dr M. Grasshoff (pers. comm.) has recently examined the type of this species and has observed the sclerites to be as described here.

Acabaria rubra is a highly variable species regarding growth form as well as colour. Low-growing (<150 mm high) colonies that are multiplanar and densely bushy occur in protected localities on vertical walls. Tall colonies (up to 200 mm or more in length) that are planar with relatively less branching occur in open areas such as on horizontal reefs and the tops of boulders and shipwrecks. These colonies are aligned perpendicular to prevailing currents. Anastomosis occurs frequently in most colonies, both in planar and multiplanar growth forms. Polyps may occur on only two sides of the branches (as in planar colonies in which the polyps are aligned parallel to the plane of branching), or may occur crowded together on all sides of the branches (as in most multiplanar and many planar colonies). Some colonies may grow in tangled mats together with large assemblages of sponges, bryozoans, or tunicates. Colonies may be entirely red, orange, yellow or white, or may be various shades of red-orange with yellow calyces or anthocodiae. Anthocodiae may also be white. Thus, depending on the amount of expansion or retraction of the anthocodiae, colonies may be either bicoloured or monochromatic.

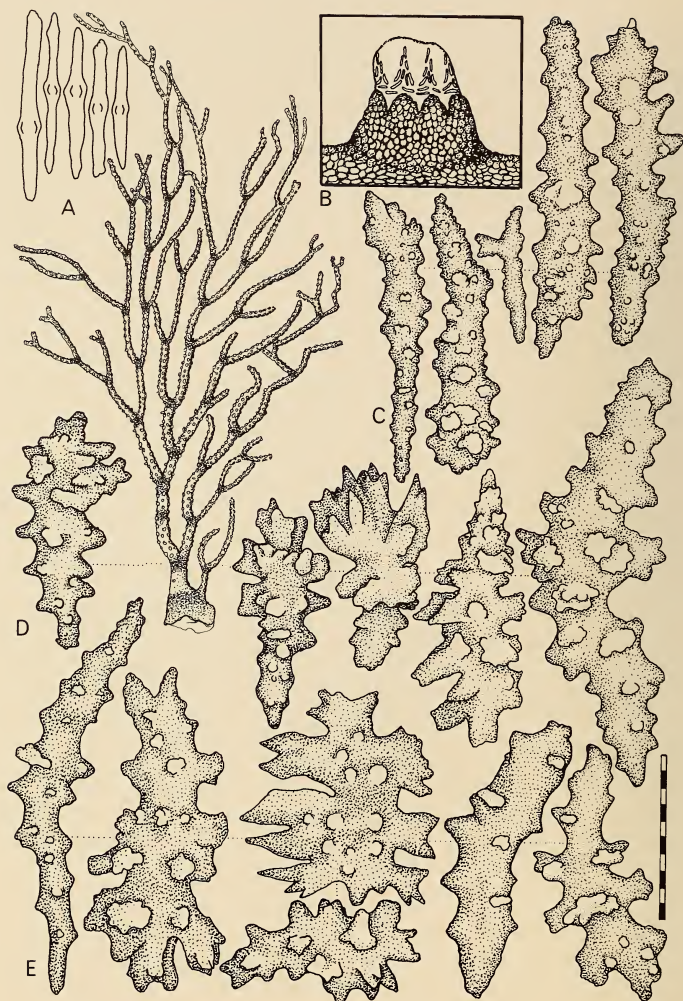


Fig. 11. *Acabaria rubra* (Esper, 1798). A. An entire colony, 125 mm long, and five sclerites from the axis. B. A single polyp showing placement of sclerites in the partially retracted anthocodia and basal calyx; length of polyp 1,2 mm. C. Anthocodial sclerites. D. Calyx sclerites. E. Coenenchymal sclerites. Scale bar = 0,1 mm for all sclerites figured.

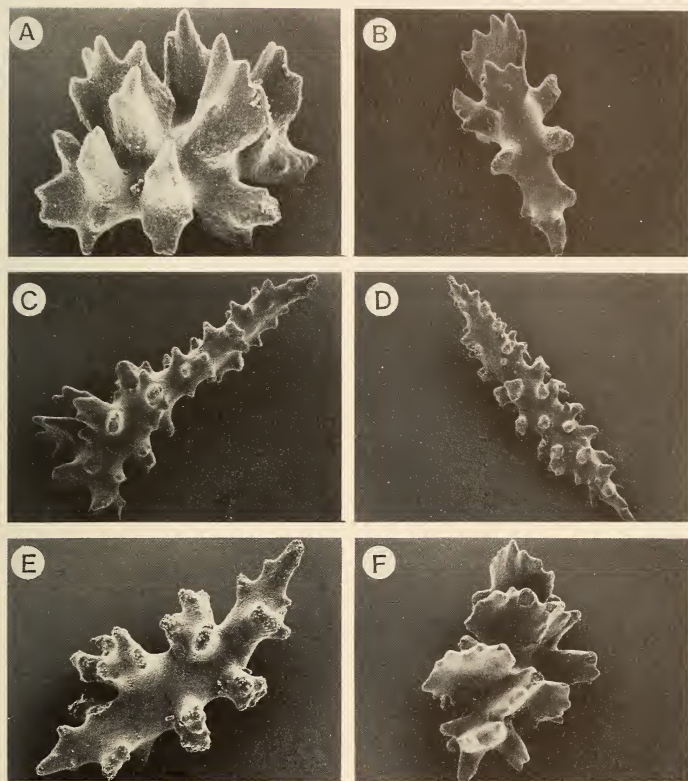


Fig. 12. Scanning electron micrographs. *Acabaria rubra* (Esper, 1798); sclerites of the calyx and coenenchyme. A. 0,080 mm. B. 0,100 mm. C. 0,170 mm. D. 0,240 mm. E. 0,125 mm. F. 0,120 mm.

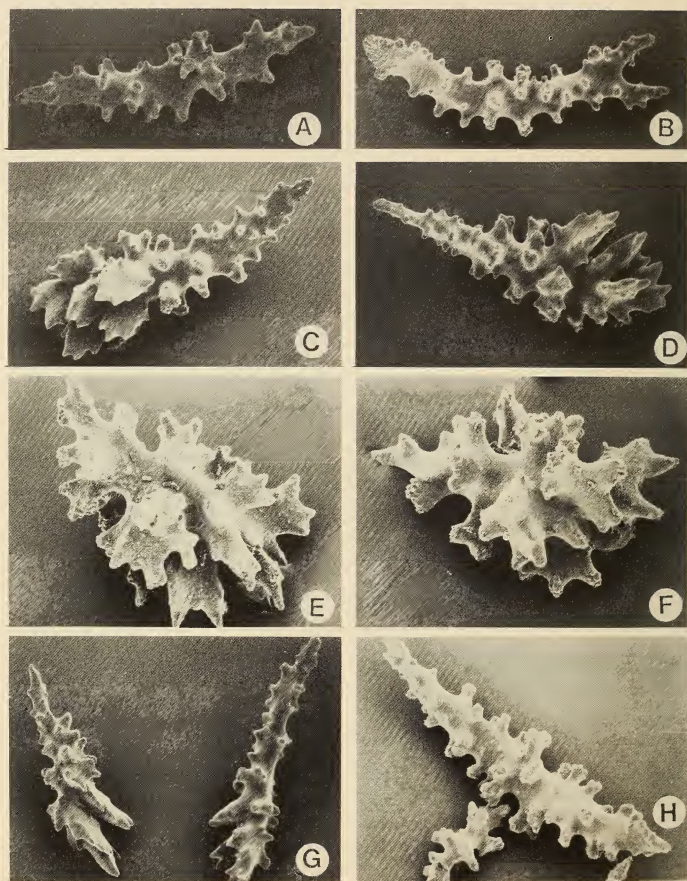


Fig. 13. Scanning electron micrographs. *Acabaria rubra* (Esper, 1798): sclerites of the calyx and coenenchyme. A. 0,21 mm. B. 0,225 mm. C. 0,215 mm. D. 0,20 mm. E. 0,125 mm. F. 0,120 mm. G. Two sclerites, 0,185 mm and 0,210 mm. H. Two sclerites, 0,080 mm and 0,240 mm.

The relative proportions of the various types of sclerites (spindles, clubs, leaf clubs, and unilaterally foliate spheroids) is also quite variable.

Molander (1929: 7) recognized the remarkable variation within this species. The great variability of many species in the family has also led to much confusion in the literature as several names have often been applied to the same species (as exemplified by *Acabaria rubra*).

Other species of Melithaeidae

Acabaria rubra is by far the commonest melithaeid in southern African coastal waters, but at least twelve other melithaeids have been recorded or described from southern Africa. Because of the present state of the literature, it is not possible to identify most melithaeids with much degree of confidence (P. Alderslade and Dr F. M. Bayer, pers. comm.). I believe that a generic revision, comparison of holotypes, and a study of intraspecific variation, are necessary before the regional species (other than *A. rubra*) can be identified with assurance.

Those that appear in the literature (excluding the names here considered to be synonyms of *Acabaria rubra*) are:

Acabaria capensis (Studer, 1879) (recorded by Tixier-Durivault (1954: 530) as a melithaeid; = *Isidella capensis* Studer, 1879 [*incertae sedis*]).

Acabaria rosea Tixier-Durivault, 1954: 531.

Acabaria sp. Thomson, 1917: 12.

Acabaria valdiviae Kükenthal, 1908: 198.

Melitodes faurii Thomson, 1917: 6.

Melitodes grandis Thomson, 1917: 8.

Mopsella singularis Thomson, 1917: 10.

Wrightella coccinea Gray, 1870; recorded by Hickson, 1904: 219 and Tixier-Durivault, 1954: 530.

Wrightella fragilis Thomson, 1917: 15.

Wrightella furcata Thomson, 1917: 17.

Wrightella sp. Thomson, 1917: 19.

Wrightella trilineata Thomson, 1917: 13.

An unidentified, cherry-red species tentatively referable to the genus *Wrightella* occurs in Algoa Bay (10 m depth). A delicate deep-red species of *Acabaria* has been found on the Kosi Bay reefs, 18–24 m in depth (Williams 1989; in press c).

Family *Keroeidae* Kinoshita, 1910

Axis composed of a central core of horn that is chambered with a surrounding cortex of smooth rod-like unfused sclerites in sheaths of horn. Axis surrounded by an axial sheath. Coenenchymal sclerites are spindles, plates, or triradiates. Polytypic monomorphic.

Three Indo-Pacific genera; one genus in southern Africa.

Genus *Ideogorgia* Bayer, 1981

non *Juncella* (misspelling of *Junceella* Valenciennes, 1855) Hickson, 1900: 85.

Dendrogorgia Simpson, 1910: 62; preoccupied by *Dendrogorgia* Duchassaing, 1870 (see Bayer 1981: 902).

Ideogorgia Bayer, 1981: 919.

Diagnosis

Polyps retractile, not forming calyces. Coenenchymal sclerites are primarily triradiates.

A monotypic genus endemic to South Africa.

Type species. Dendrogorgia capensis Simpson, 1910; South Africa.

Ideogorgia capensis (Simpson, 1910)

Figs 9E–G, 14–16

Juncella elongata (non Pallas, 1766) Hickson, 1900: 85, pl. 5 (fig. D).

Juncella elongata (non Pallas, 1766) var. *capensis* Hickson, 1904: 233.

Dendrogorgia capensis Simpson, 1910: 62, figs 1–4.

Spongioderma capensis Kükenthal, 1919: 95; 1924: 36.

Ideogorgia capensis Bayer, 1981: 919, fig. 31.

Material

SAM–H3870, off Cape St Francis, eastern Cape Province (34°16'S 24°50'E), 30 m, 20 October 1985, 1 colony, SCUBA, W. R. Liltved. SAM–3875, off Cape St Francis (34°16'S 24°50'E), 37 m, 14 January 1986, 1 colony, SCUBA, W. R. Liltved. SAM–3592, Algoa Bay (33°50'S 25°45'E), depth unrecorded, 13 dry colonies, bottom trawl, *Ocean Pearl*. SAM–H1129, off Algoa Bay (33°58'S 25°51'30"E), 46 m, 1 November 1898, 1 colony fragment, dredge, S.S. *Pieter Faure* survey, PF 504.

Description

The colonies examined range in length from 180 mm to 750 mm. Colonies elongate, upright, more-or-less planar. Branching dichotomous, sparse. Anastomosis absent. Branching begins from the top of the single basal stem, which does not exceed 70 mm in length. Base of colony up to 30 mm in diameter. Branches 40–120 mm long. Terminal branches slender and whip-like, tapering gradually toward the terminus. Retracted polyps do not form calyces and are capable of totally withdrawing into the coenenchyme. Surface of branches smooth; or with minute, low, rounded protuberances corresponding to polyps; or weakly longitudinally grooved (particularly near the base). Sclerites from the coenenchyme are primarily triradiates with some double heads, 0.03–0.08 mm in length. Sclerites from the axis cortex are irregularly-shaped flattened rod-like forms 0.07–0.17 mm in length. Anthocodial sclerites absent. Colony colour uniform brick-red in alcohol, pink when dry. Anthocodiae white.

Distribution

The species is known only from Cape St Francis and Algoa Bay, eastern Cape Province; 30–73 m in depth; presumably endemic to southern Africa. It is frequently encountered in large quantities by trawlers. Type locality is Algoa Bay.

Remarks

Ideogorgia capensis is distinguished by the presence of sclerites that are mainly small compact triradiates (0,03–0,08 mm in diameter) and a horn-like central chord in the axis.

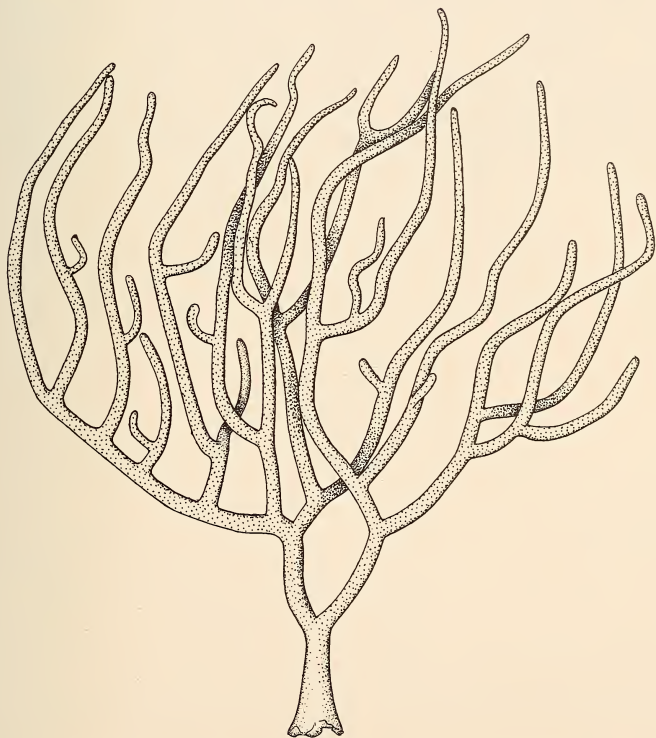


Fig. 14. *Ideogorgia capensis* (Simpson, 1910). An entire colony, 200 mm in length, low growth form.

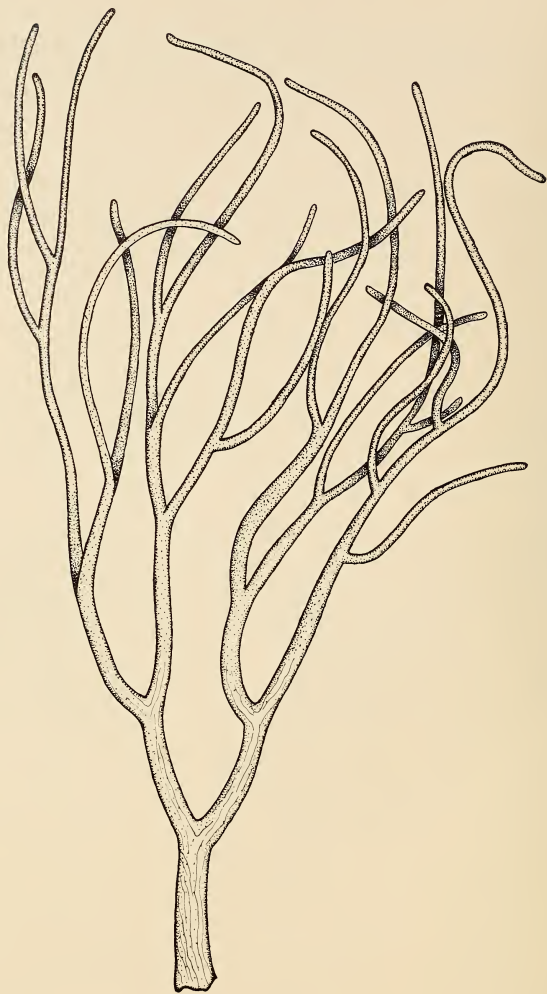


Fig. 15. *Ideogorgia capensis* (Simpson, 1910). An entire colony, 280 mm in length, tall growth form.

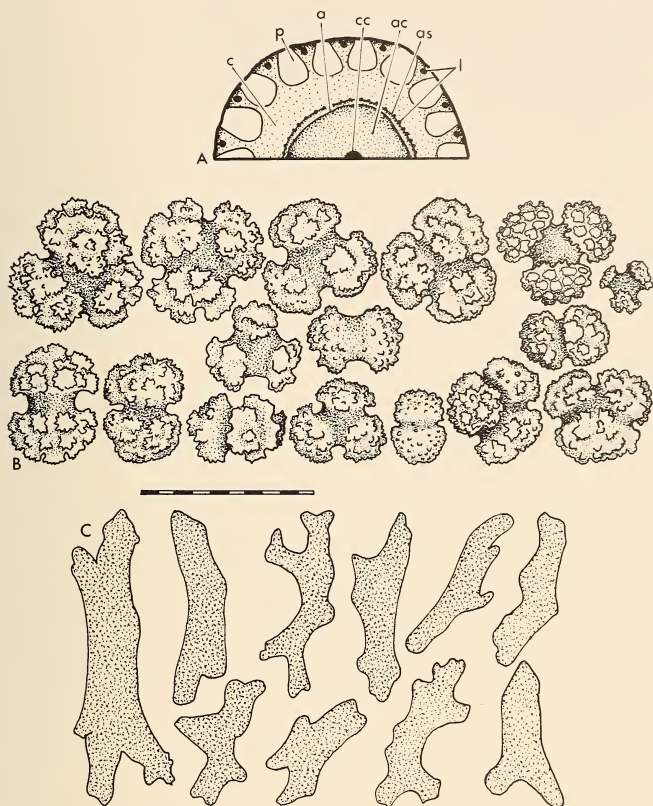


Fig. 16. *Ideogorgia capensis* (Simpson, 1910). A. Half transverse section through a distal branch showing internal structure; total diameter 5 mm. Abbreviations: a—axis, ac—axis cortex, as—axial sheath, c—coenenchyme, cc—central chord, l—longitudinal canals, p—polyp. B. Sclerites from the coenenchyme. C. Sclerites from the axis cortex. Scale bar = 0,1 mm.

Family Acanthogorgiidae Gray, 1859

Axis composed solely of horn with a chambered central core. Coenenchyme thin. Polyps monomorphic, non-retractile, cylindrical or clavate, heavily armed with spindles.

Seven genera of cosmopolitan distribution. Two genera in southern Africa.

Genus *Acanthogorgia* Gray, 1857

Acanthogorgia Gray, 1857: 128. Bayer, 1956: 203. Kükenthal, 1919: 298; 1924: 239. Stiasny, 1943: 127.

Blepharogorgia (part.) Duchassaing & Michelotti, 1864: 15.

Boarella Gray, 1870: 406.

Paracanthogorgia Stiasny, 1947: 53.

Diagnosis

Calyces tall cylindrical. Calyx walls covered with bent spindles arranged in eight *en chevron* longitudinal rows. Distal terminus of calyx armed with eight groups of projecting crown spines.

Approximately 30 species from all seas in deeper water (50 m to over 1 200 m).

Type species. *Acanthogorgia hirsuta* (? = *A. aspera* Pourtales, 1867); see Bayer, 1956: 203; northern Atlantic.

Remarks

At least two unidentified species of *Acanthogorgia* are known from southern Africa. One species is present from off the Cape Peninsula and southern Transkei, 303–585 m in depth. Hickson (1904: 225) identified this species as *A. armata* Verrill, 1878, originally described from the Atlantic coast of North America. Thomson (1911: 880; 1916: 21; 1923: 75) followed Hickson's identification for additional material. Thomson (1917: 21) also described a fragmentary and unidentified specimen of *Acanthogorgia* from Cape Vidal, northern Natal, 146–183 m in depth. Stiasny (1940: 21) questioned Hickson's identification. A species different to Hickson's and Thomson's material has recently been found off Durban, Natal, at 133 m in depth. I consider all these specimens to be unidentifiable at present. A comparison with the original descriptions and type material of the many recognized species is necessary for valid species identifications.

Genus *Anthogorgia* Verrill, 1868

Anthogorgia Verrill, 1868: 413. Thomson & Simpson, 1909: 194. Nutting, 1910: 25.

Diagnosis

Calyces cylindrical. Sclerites of apex of calyx *en chevron* in eight points. Sclerites of calyx body wall only slightly or indistinctly *en chevron*. Interior coenenchyme in contact with the axis possesses small radiates.

Seven species of the Indo-Pacific.

Type species. *Muricea divaricata* Verrill, 1865; Indo-West Pacific.

Remarks

Thomson (1917: 22) recorded *Muricella ramosa* Thomson & Henderson, 1905 (known originally from the Persian Gulf to the Malay Archipelago at 40–113 m in depth), from Durnford Point, northern Natal, at 82 m in depth.

Thomson's specimen (SAM-H975) and an additional specimen, also from Durnford Point but from 165 m (SAM-H1003), are here considered to represent an unidentified species of *Anthogorgia*. These specimens have cylindrical calyces with sclerites from the calyx wall forming points that are only indistinctly *en chevron*.

The present work represents a new record for the genus *Anthogorgia* in southern Africa.

Family **Plexauridae** Gray, 1859

Axis composed of a chambered central core and a surrounding area of horn that usually contains varying amounts of calcium carbonate not in the form of sclerites. Polyps monomorphic, capable of retracting completely into coenenchyme or anthocodiae retracting into permanent calyces.

A diverse family of 30 genera; widespread in the Atlantic, Indian, and Pacific Oceans. At least five genera in southern Africa.

Genus *Echinomuricea* Verrill, 1869a

Echinomuricea Verrill, 1869a: 285. Wright & Studer, 1889: 112. Thomson & Simpson, 1909: 198. Nutting, 1910: 56.

Diagnosis

Permanent calyces present, often conspicuous and more or less prickly. Many sclerites of the calicular region are thorn stars with a single elongate tapering spine projecting from a basal plate that is branched or lobed. Colony colour usually brown or red.

Approximately 16 species of the Indo-West Pacific and Gulf of Mexico.

Type species. Nephthya coccinea Stimpson, 1855, Hong Kong.

Remarks

Two unidentified species have recently been collected from the Durban region of Natal—a richly branched red form known from 10 m depth and a sparsely branched light brownish-grey form from 53–88 m depth. Identification to species has not been made at present.

The present work represents a new record for the genus *Echinomuricea* in southern Africa.

Genus *Euplexaura* Verrill, 1869c

Plexaura Verrill, 1865: 186 (*part.*).

Euplexaura Verrill, 1869c: 75. Wright & Studer, 1889: 143. Kükenthal, 1919: 215; 1924: 90.

Diagnosis

Calyces form low inconspicuous protuberances. Sclerites are spindles, many approaching tuberculate ovals and spheroids.

A genus of perhaps 20 species of the Indian and Pacific oceans.

Type species. *Euplexaura capensis* Verrill, 1869c; South Africa.

Remarks

Two unidentified species have recently been collected from off Durban, Natal, from 14 m and 68 m in depth. Both species are brownish-white in colour. They have not been identified to species.

Verrill (1865) misidentified South African material as *Plexauria friabilis* Lamouroux, 1816. Verrill (1869c) subsequently created the name *Euplexaura capensis* for the same taxon. Verrill's material is not presently available for comparison with the recently collected specimens.

Thomson (1911: 883, pl. 44 (figs 2a-c)) described *Euplexaura media* from Cape Recife, south coast of South Africa, 31 m depth. Thomson (1917: 24) identified a specimen from Stalwart Point, eastern Cape Province (97 m depth) as *Euplexaura parciadlos* Wright & Studer, 1889, originally described from Japan. Examination of both of Thomson's specimens has shown them to belong to the genus *Lophogorgia*, owing to the predominance of symmetrical six- and eight-radiates. Reliable identification to species is not possible since the material is dry, fragmentary, and badly damaged.

Genus *Menella* Gray, 1870

Menella Gray, 1870: 407. Wright & Studer, 1889: 53. Nutting, 1910: 85.

Diagnosis

Sclerites are rooted leaves with broad rounded blades forming the distal projection and a branched tuberculated handle forming the proximal portion. Irregular spindles also present.

Three or four species of the Indo-Pacific.

Type species. *Menella indica* Gray, 1870; Japan.

Remarks

Two colonies representing this genus have recently been collected on the sublittoral coral reefs at Sodwana Bay and Kosi Bay, northern Natal, at 18–24 m in depth (Williams 1989: 142; in press c). The material has not been identified to species. The colonies are deep wine-red in colour.

The present work represents a new record for the genus *Menella* in southern Africa.

Genus *Astromuricea* Germanos, 1896

Astromuricea Germanos, 1896: 175.

Diagnosis

Colonies planar, branching sparse to profuse. Axis thick, coenenchyme thin. Anthocodiae with conspicuous crown and points. Permanent calyces with

thorn scales, some of which have an elongated basal root and a tuberculated or serrated head that arises obliquely. Coenenchyme contains thorn scales or thorn spindles.

A genus of at least two species from the Indo-West Pacific.

Type species. Astromuricea polyklados Germanos, 1896; Ternate (Indonesia).

Astromuricea fusca (Thomson, 1911) comb. nov.

Figs 17–18, 19A–C

Muriceides fusca Thomson, 1911: 878, pl. 44 (figs 4a–c). Kükenthal, 1924: 164. Stiasny, 1940: 20, pl. 2 (figs 11–12).

Villogorgia mauritiensis (non Ridley, 1882) Hickson, 1900: 87.

Material

SAM–H3603, off Gonubie, eastern Cape Province (33°04,7'S 28°07,2'E), 90 m, 17 July 1984, 4 dry colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM–H3821, off Whale Rock, Transkei (32°02,0'S 29°19,1'E), 200–210 m, 3 July 1985, 3 dry colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM–H3905, off Whale Rock, Transkei (32°02,0'S 29°19,1'E), 200–210 m, 3 July 1985, 4 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM–H3606, off Park Rynie, Natal (30°20,05'S 30°51,4'E), 96 m, 10 July 1984, 5 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*.

Description

Colonies examined range from 80 mm to 300 mm in height and 70 mm to 500 mm in breadth. Colonial growth form is planar, branching is bushy and usually lateral; some anastomosis does occur between adjacent branches. Colonies arise from a broad and bulky holdfast, often with a wood-like texture. Polyps with permanent calyces, anthocodiae capable of total retraction into calyces but are mainly preserved slightly exerted. Calyces 1–2 mm in length. Polyps present on all sides of branches or restricted to opposite longitudinal rows, parallel to plane of colony. Axis thick, coenenchyme thin and densely spiculiferous. Anthocodia with crown and points composed of spindles arranged *en chevron*. These spindles are usually somewhat bent, tuberculated, and measure 0,12–0,35 mm in length.

Calyx sclerites are irregularly-shaped thorn scales, usually 0,15–0,20 mm in length. The surfaces of these sclerites usually have several large tubercles. Coenenchymal sclerites are 0,08–0,15 mm long. These are usually in the form of butterflies or thorn scales with coarse tuberculation. Colony colour brown, or grey in life and when preserved dry or in alcohol.

Distribution

Known only between East London, eastern Cape Province, and along the Transkei coast to Durban, Natal; 90–360 m in depth (Williams in press *a*).

Specific type locality not known. The present work represents a new record for the genus in southern Africa.

Remarks

Hickson (1900: 87) identified a specimen from 155 m off East London as *Villogorgia mauritiensis* Ridley, 1882. Examination of Hickson's specimen shows no significant differences with specimens of *Astromuricea fusca* from the same locality. I therefore consider that Hickson's material should be attributed to this species. The South African material has characteristics conforming to the genus *Astromuricea* and differing from those of *Villogorgia* or other plexaurid genera. These are the possession of thorn scales that are mostly higher than wide and consist of several diverging processes, not with distinct basal processes; four radiates with central projections are not present in the coenenchyme; anthocodiae have numerous relatively small sclerites forming a distinctive crown and points.

Thomson (1911: 878) originally assigned this species to the genus *Muriceides* Studer, 1887. However, the form of the sclerites is not typical of this genus, but conforms rather to those of the genus *Astromuricea* Germanos, 1896 (Dr F. M. Bayer pers. comm.), and therefore Thomson's generic placement

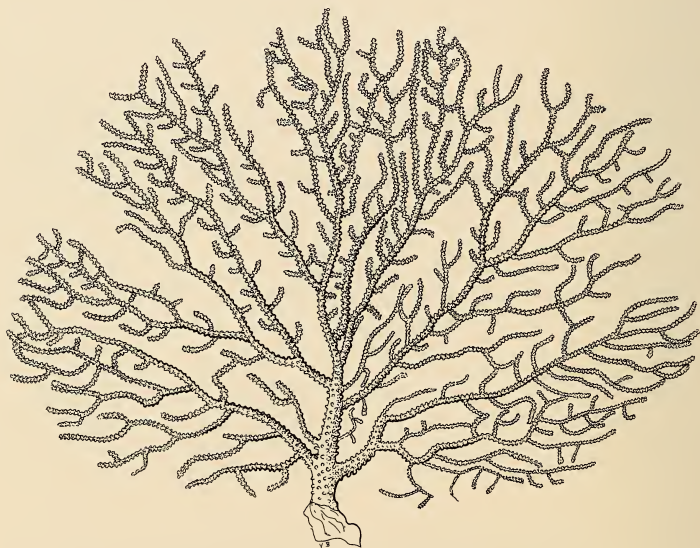


Fig. 17. *Astromuricea fusca* Thomson, 1911. An entire colony, 205 mm in height.

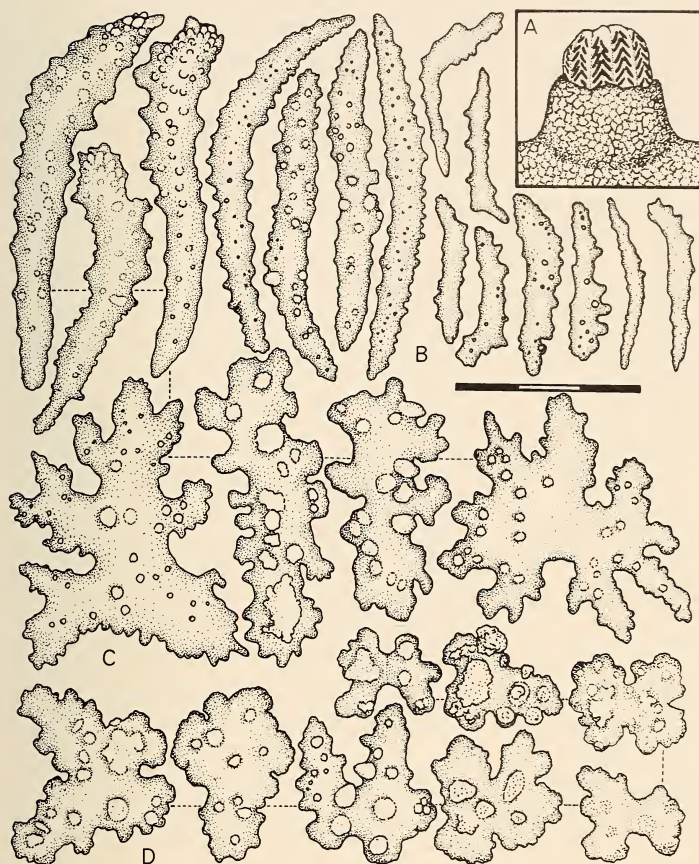


Fig. 18. *Astromuricea fusca* (Thomson, 1911). A. A single polyp with partially retracted anthocodia, showing placement of sclerites in anthocodia and calyx; total length of polyp 1,4 mm. B. Anthocodial sclerites. C. Calyx sclerites. D. Coenenchymal sclerites. Scale bar = 0,15 mm.

must be regarded as incorrect. The classification of paramuriceid genera within the Plexauridae is presently unsettled. The placement of Thomson's species in the genus *Astromuricea* is here considered provisional, since it may possibly be a synonym of *Paramuricea* K  lliker, 1865, or *Placogorgia* Studer, 1887. There are also similarities in some respects to the genus *Echinogorgia* K  lliker, 1865 (Dr F. M. Bayer pers. comm.).

Genus *Acanthomuricea* Hentschel, 1903

Acanthomuricea Hentschel, 1903: 650.

Diagnosis

Colonies are very sparsely branched or unbranched. Polyps are mostly arranged in two lateral rows. Calyces are prominent and conical in shape. Sclerites of the calyces and coenenchyme are relatively large tuberculate spindles. Those of the calyces are more or less longitudinally placed.

A genus of at least two species from the Indo-West Pacific.

Type species. *Acanthomuricea biserialis* Hentschel, 1903; Amboina (Indonesia).

Acanthomuricea pulchra (Thomson, 1911) comb. nov.

Figs 19D–G, 20–21

Psammogorgia pulchra Thomson, 1911: 881, pl. 43 (fig. 5), pl. 45 (figs 3a–b). K  kenthal, 1919: 240; 1924: 110. Stiasny, 1940: 18, text-fig. A.

Material

SAM–H3610, off Gonubie, eastern Cape Province (33  04,7'S 28  07,2'E), 90 m, 17 July 1984, 4 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM–H3616, off East London, eastern Cape Province (33  15,0'S 27  58,0'E), 85 m, 17 July 1984, 2 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*.

Description

Colonies examined measure 20–40 mm in height. Colonies are unbranched or sparsely branched dichotomously. Anastomoses absent. Apices of branches sometimes slightly clavate. Anthocodiae with conspicuous crown and points of red, finely tuberculated spindles, some slightly bent, 0.20–0.65 mm in length. Surface of colony warty in appearance due to placement of numerous calyces mostly on all sides of branches. Sclerites of calyces and coenenchyme are mainly yellow, coarsely tuberculate clubs and spindles, 0.45–1.00 mm in length. Colony colour yellow with red anthocodiae.

Distribution

Known only from the coasts of the eastern Cape Province and southern Transkei, 85–100 m in depth (Williams in press *a*). Type locality is Cape

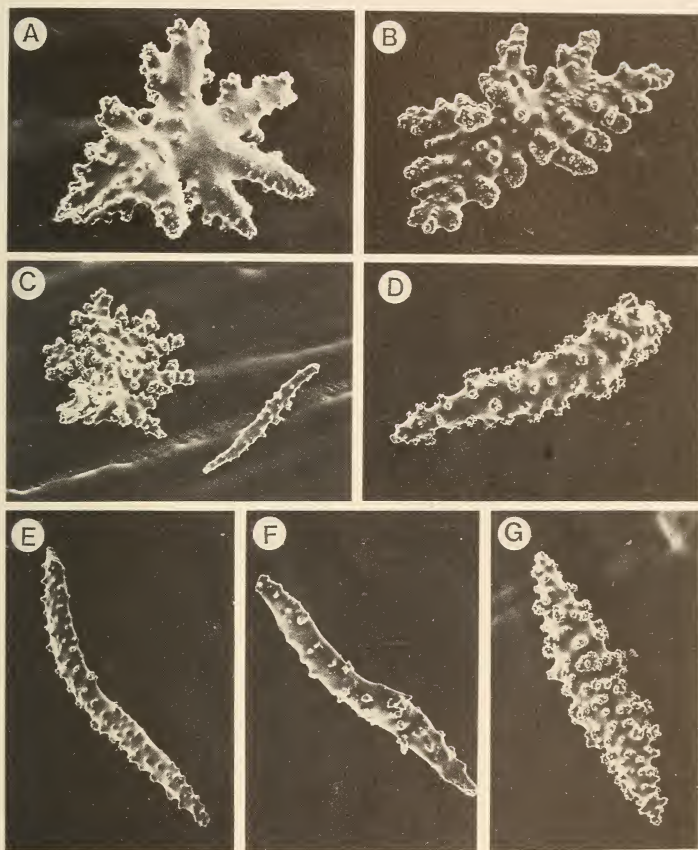


Fig. 19. Scanning electron micrographs. A-C. *Astromuricea fusca* (Thomson, 1911); calyx sclerites. A. 0,225 mm. B. 0,3 mm. C. Two sclerites, each 0,2 mm. D-G. *Acanthomuricea pulchra* (Thomson, 1911). D. Calyx sclerite, 0,6 mm. E. Anthocodial sclerite, 0,46 mm. F. Anthocodial sclerite, 0,32 mm. G. Calyx sclerite, 0,78 mm.

Morgan, border of Cape Province and Transkei (Thomson 1922: 881). The present work represents the first record for the genus in southern Africa.

Remarks

This species is distinguished by its small size (<40 mm tall), sparse dichotomous branching, yellow coloration with red anthocodiae, and coarsely tuberculated coenenchymal sclerites that are robust spindles and clubbed spindles.

Thomson (1911: 881) originally assigned this species to the genus *Psammogorgia* Verrill, 1868. *Psammogorgia* is a Panamic genus, endemic to the eastern Pacific, and shows no relation to the South African material (Dr F. M.

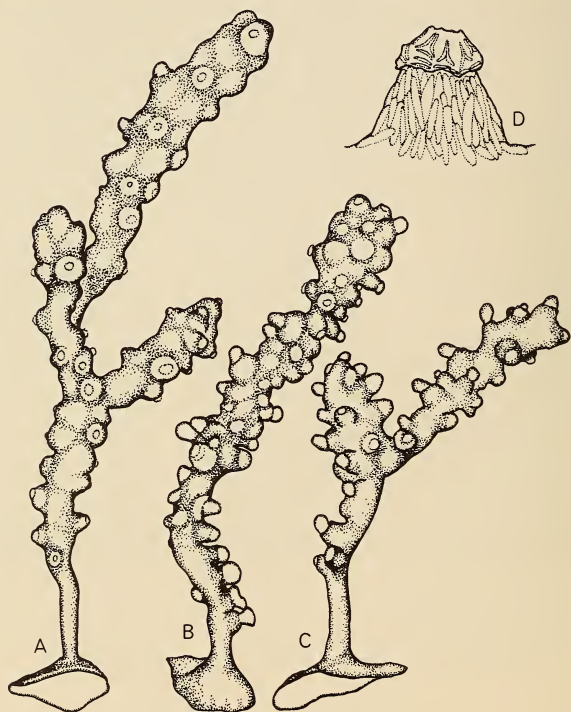


Fig. 20. *Acanthomuricea pulchra* (Thomson, 1911). A. An entire colony, 32 mm in length. B. Colony, length 23 mm. C. Colony, length 18 mm. D. A single polyp showing placement of sclerites in partially retracted anthocodia and calyx; total length of polyp 1.3 mm.

Bayer pers. comm.). Thomson's generic placement must therefore be considered incorrect. The present generic designation must be considered provisional since several similar paramuriceid genera are presently considered problematical, including *Muricella* of many authors but not Verrill. *Astrogorgia*

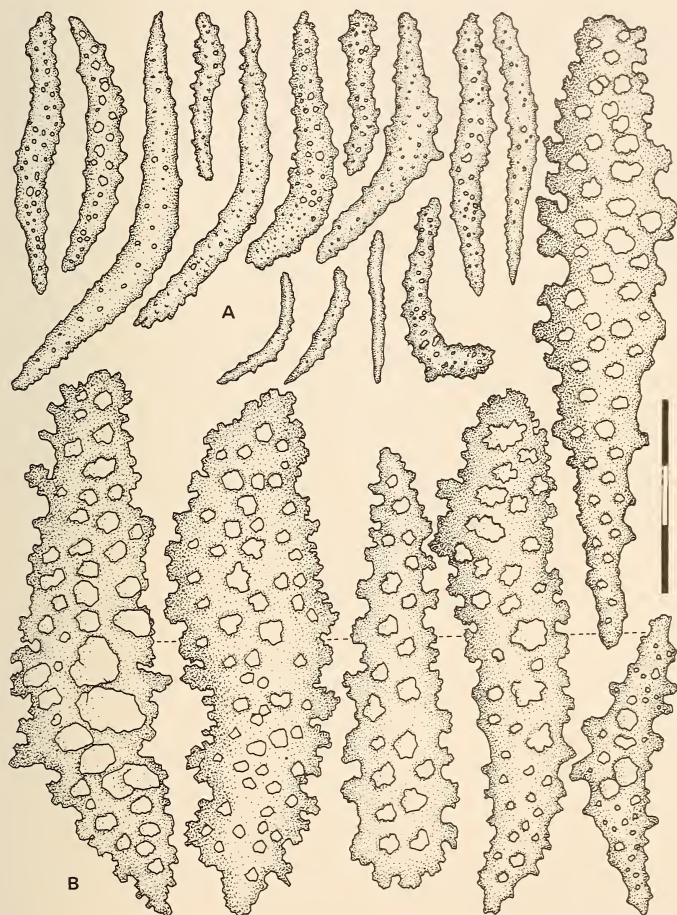


Fig. 21. *Acanthomuricea pulchra* (Thomson, 1911). A. Anthocodial sclerites. B. Sclerites from the calyces and coenenchyme. Scale bar = 0.3 mm.

Verrill, 1868, *Anthomuricea* Studer, 1887, and *Acanthomuricea* Hentschel, 1903 (Dr F. M. Bayer pers. comm.).

Other species of the family Plexauridae

Thomson (1917: 41, pl. 1 (figs 4, 7), pl. 4 (fig. 5)) described *Stenogorgia capensis* from Algoa Bay. Thomson's material is not presently available for examination and no new material assignable to this species has been obtained. *Stenogorgia* Verrill, 1883, is considered by Deichmann (1936), Grasshoff (1977) and Bayer (1981: 945) as a junior synonym of *Swiftia* Duchassaing & Michelotti, 1864. Thomson's description and figures of *Stenogorgia capensis* seem to fit the genus *Leptogorgia* (family Gorgoniidae); it strongly resembles the three very similar species (assignable to *Leptogorgia* by the presence of symmetrical tuberculation of the coenenchymal capstans) and described by Kükenthal (1919) as *Leptogorgia abietina*, *Leptogorgia tenuissima*, and *Leptogorgia pusilla*, all from the South African south coast. These three taxa may in fact represent a single species. However, the type material is not available for examination.

Family **Gorgoniidae** Lamouroux, 1812

Axis composed purely of horn with a narrow chambered central core, and dense cortex. Polyps monomorphic, capable of total retraction into coenenchyme. Calyces present or absent. Anthocodia usually flattened rods, not forming a conspicuous crown and points. Coenenchymal sclerites are spindles with whorls of tuberculation, in the form of radiates, balloon clubs, scaphoids, capstans, clubs, or double wheels.

Fourteen genera of the Atlantic, Mediterranean, Caribbean, and Indo-Pacific. At least three genera in southern Africa.

Genus *Eunicella* Verrill, 1869b

Eunicella Verrill, 1869b: 425. Kükenthal, 1919: 255; 1924: 133.

Diagnosis

Surface layer of coenenchyme with numerous balloon clubs overlying an interior layer of girdled spindles.

A genus of perhaps 12 species of the Atlantic, Mediterranean, southern Africa, and Japan.

Type species. Gorgonia verrucosa Pallas, 1766; Spain.

Eunicella albicans (Kölliker, 1865)

Figs 1D, 22–24

Gorgonia palma var. *alba* (non Pallas, 1766) Esper, 1797: 153, pl. 40.

Gorgonia albicans Kölliker, 1865: 139. Hickson, 1904: 228. Thomson, 1917: 36.

Eunicella palma (non Pallas, 1766) Verrill, 1869b: 426.

Eunicella alba Tixier-Durivault, 1954: 624.

Eunicella albicans Kükenthal, 1919: 269; 1924: 136. Velimirov, 1971: 267, figs 1a–b, 2.

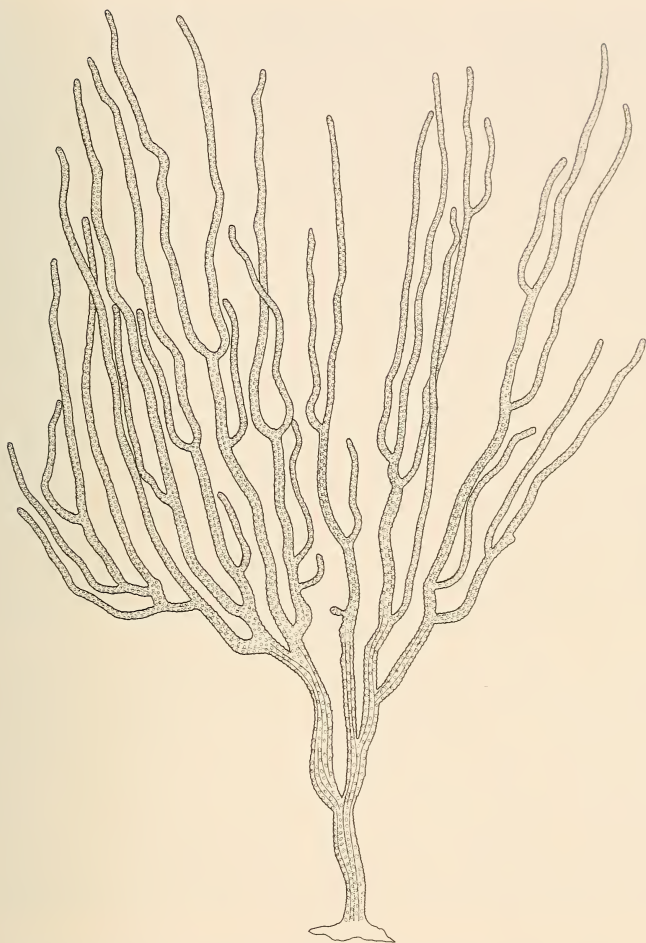


Fig. 22. *Eunicella albicans* (Köl liker, 1865). An entire colony, 300 mm in length.

Material

SAM-H3257, Algoa Bay (33°59'S 25°40'E), 10 m, February 1984, 1 colony, SCUBA, W. R. Liltved. SAM-H3262, Algoa Bay (33°59'S 25°40'E), 10 m, February 1984, 1 colony, SCUBA, W. R. Liltved. SAM-H3917, Algoa Bay (33°59'S 25°40'E), 10 m, 20 May 1984, 1 colony, SCUBA, G. C. Williams.

Description

Colonies examined range in length from 185 mm to 650 mm. Colonies are upright, branching is dichotomous and planar. Branches arise from a single basal main stem. Branches straight or slightly curved, not conspicuously sinuous. Anastomosis apparently does not occur. Branches are conspicuously flattened in the proximal region of the colony. These often have a series of longitudinal lines evident on the surface. The plane of the flattened branches is parallel to the plane of colony. The distal regions of the ultimate branches are cylindrical, sometimes slightly flattened. Polyps present on all sides of branches, forming hemispherical calyces or totally retracting into coenenchyme, forming slits

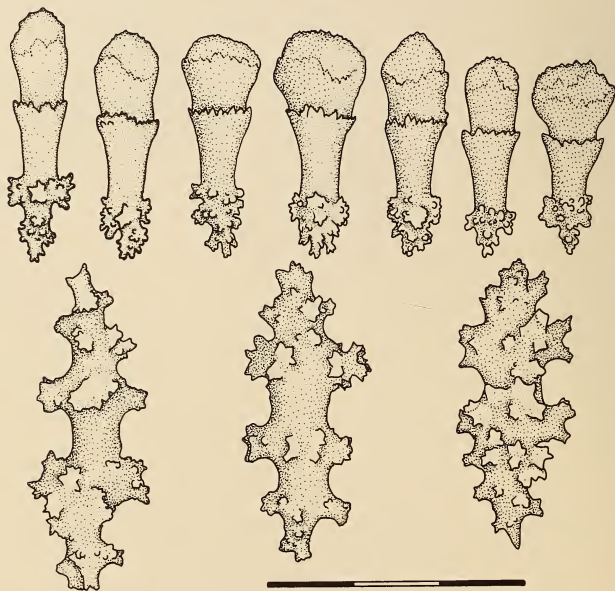


Fig. 23. *Eunicella albicans* (Kölliker, 1865). Coenenchymal sclerites. Scale bar = 0.15 mm.

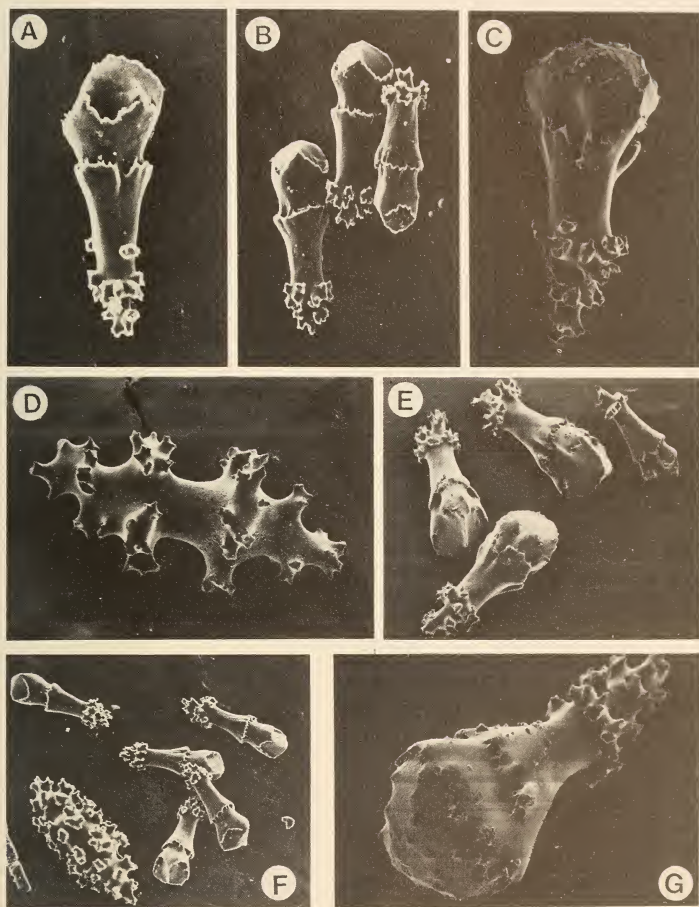


Fig. 24. Scanning electron micrographs. *Eunicella albicans* (Köl liker, 1865); coenenchymal sclerites. A. 0.125 mm. B. Three sclerites 0.105–0.120 mm. C. 0.085 mm. D. 0.130 mm. E. Four sclerites 0.075–0.195 mm. F. Six sclerites 0.105–0.190 mm. G. 0.085 mm.

<0,5 mm long. Coenenchymal sclerites are medium-sized balloon clubs with two crowns, 0,11–0,15 mm in length; and girdled spindles, 0,17–0,19 mm in length. Colony colour in life is light orange, fading to white in alcohol.

Distribution

Presently known from only two localities along the south coast of South Africa: False Bay and Algoa Bay; 10–14 m in depth (Williams in press *a*); common at both these localities. The type locality is South Africa, exact locality unknown.

Remarks

Eunicella albicans differs from other southern African species of *Eunicella* by the possession of coenenchymal sclerites that are medium balloon clubs with two crowns (0,11–0,15 mm in length).

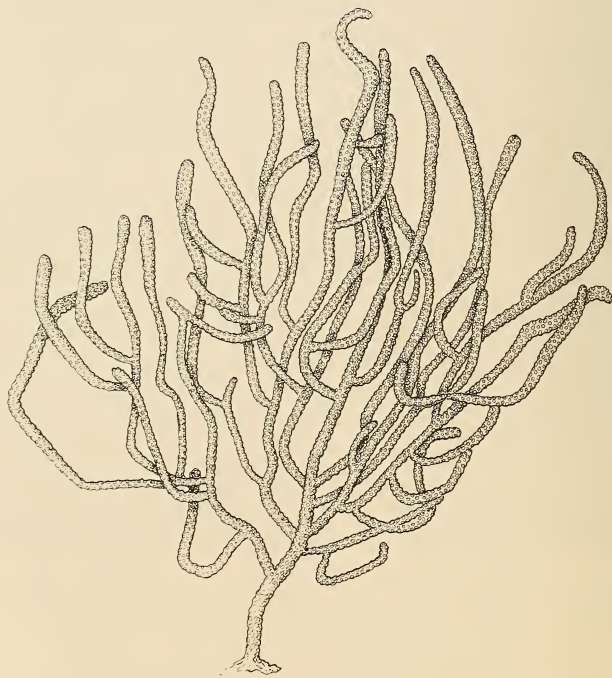


Fig. 25. *Eunicella papillosa* (Esper, 1797). An entire colony, 180 mm in height.

Eunicella papillosa (Esper, 1797)

Figs 1E, 25–28

- Gorgonia papillosa* Esper, 1797: 173, pl. 50. K  lliker, 1865 (*part.*): 139, pl. 18 (figs 25, 26, 27a).
- Eunicella papillosa* Verrill, 1869b: 425. Studer, 1879: 656. Wright & Studer, 1889: 145. Hickson, 1900: 86, pl. 5 (fig. C). Thomson, 1911: 880, pl. 43 (figs 2–3); 1917: 24. K  kenthal, 1919: 263, figs 126–128; 1924: 136. Molander, 1929: 11. Stiasny, 1938: 30, pl. 3 (fig. 12), pl. 7 (fig. 26); 1940: 20, pl. 4 (fig. 20). Broch, 1939: 26, figs 22, 23. Tixier-Durivault, 1954: 624. Day *et al.*, 1970: 16. Velimirov, 1971: 271, figs 5–6. Day, 1974: 35, fig. pg. 35. Branch & Branch, 1981, pl. 36.
- Eunicella rigida* K  kenthal, 1908: 503; 1919: 257, text-figs 118–119, pl. 30 (fig. 3); 1924: 134, fig. 98.

Material

SAM–H3296, Hottentot’s Huisie, west coast Cape Peninsula (33°59’S 18°21’E), 23 m, 15 June 1983, SCUBA, W. R. Liltved. SAM–H3303, off Llandudno, west coast Cape Peninsula (34°00’S 18°20’E), 21 m, 24 January 1984, 1 colony, SCUBA, G. C. Williams. SAM–H992, Seal Island, False Bay (34°08’S 18°35’E), 16–18 m, 30 October 1902, 1 colony, dredge, S.S. *Pieter Faure* survey, PF 15801A. SAM–H3397, off Danger Point (34°40’S 19°20’E), 25 m, 28 April 1984, 2 colonies, SCUBA, W. R. Liltved, Sea Fisheries Research Institute, Line Fish Survey. SAM–H3918, Algoa Bay (33°59’S 25°40’E), 12 m, 16 May 1984, 1 colony, SCUBA, G. C. Williams, R.V. *Meiring Naude*. SAM–H3920, off Nthlonyane River mouth, Transkei (32°16,7’S 29°06,0’E), 300 m, 5 July 1985, several fragments, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM–H3877, off Port Edward (31°05,8’S 30°18,8’E), 140 m, 8 July 1985, 3 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM–H3918, off Umhlanga, Natal (29°45’S 31°10’E), 68 m, 17 December 1984, 2 colonies, dredge, W. R. Liltved.

Description

Colonies examined measure 40–180 mm in length. Colonies grow upright or in bushy masses, planar or multiplanar. Branching dichotomous to slightly irregular, arising from a single basal main stem. Branches cylindrical, ultimate branches sometimes slightly clavate. Branches usually straight or slightly curved, not sinuous. Anastomosis apparently does not occur. Main stem cylindrical, rarely somewhat flattened. Polyps numerous on all sides of branches, rarely limited to two longitudinal tracts along opposite margins of branches. Polyps usually form hemispherical to cylindrical calyces, 1–2 mm in length. Polyps also capable of total retraction into coenenchyme, not forming calyces. Coenenchymal sclerites are small balloon clubs with two crowns, 0.08–0.1 mm in length, and girdled spindles, 0.10–0.23 mm long. Colony colour pale yellow, pinkish, or white in life, fading to white or greyish-white in alcohol.

Distribution

The most common and widespread member of the genus in southern Africa; known from Cape Columbine on the Atlantic coast of the Cape Province

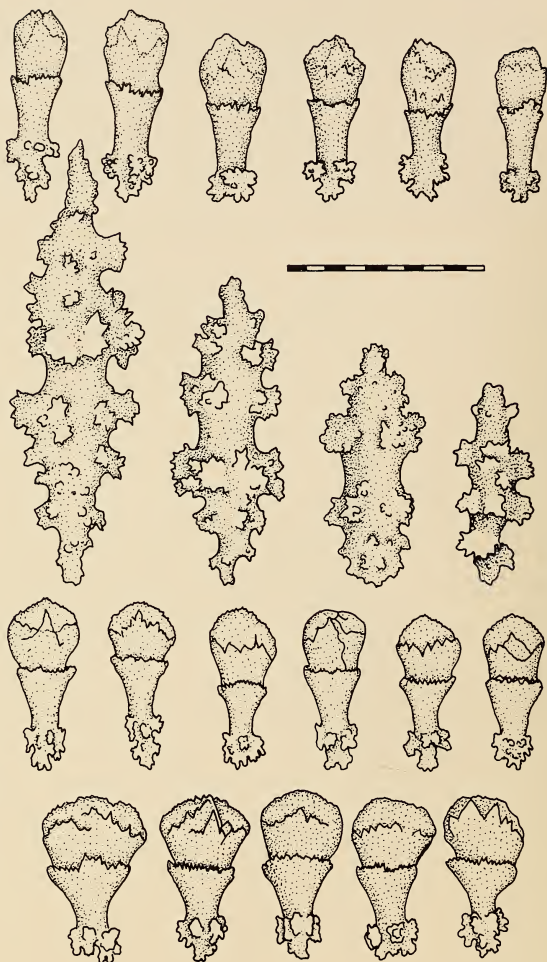


Fig. 26. *Eunicella papillosa* (Esper, 1797). Coenenchymal sclerites. Scale bar = 0,1 mm.

to Durnford Point, northern Natal, intertidal to 360 m in depth (Williams in press *a*). Type locality South Africa, exact locality not known.

Remarks

Material collected from deeper water (100 m to more than 300 m) from the eastern Cape to southern Natal, differs slightly from typical shallow-water material (0–100 m) in a number of respects. Kükenthal (1908) described this form as a separate species, *E. rigida*. Colonies from deeper water are more

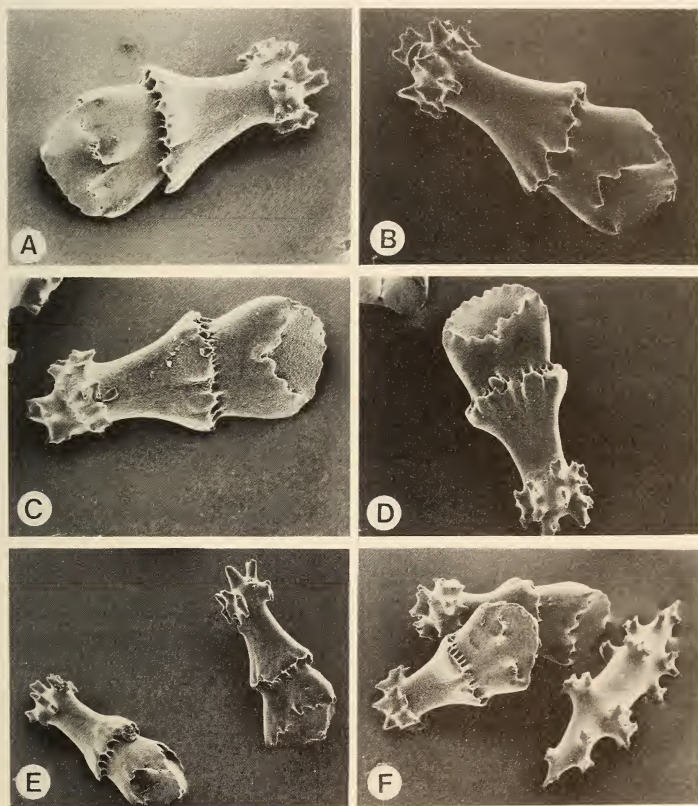


Fig. 27. Scanning electron micrographs. *Eunicella papillosa* (Esper, 1797), coenenchymal sclerites. A. 0,070 mm. B. 0,068 mm. C. 0,065 mm. D. 0,075 mm. E. Two sclerites, each 0,060 mm. F. Three sclerites, 0,060–0,075 mm.

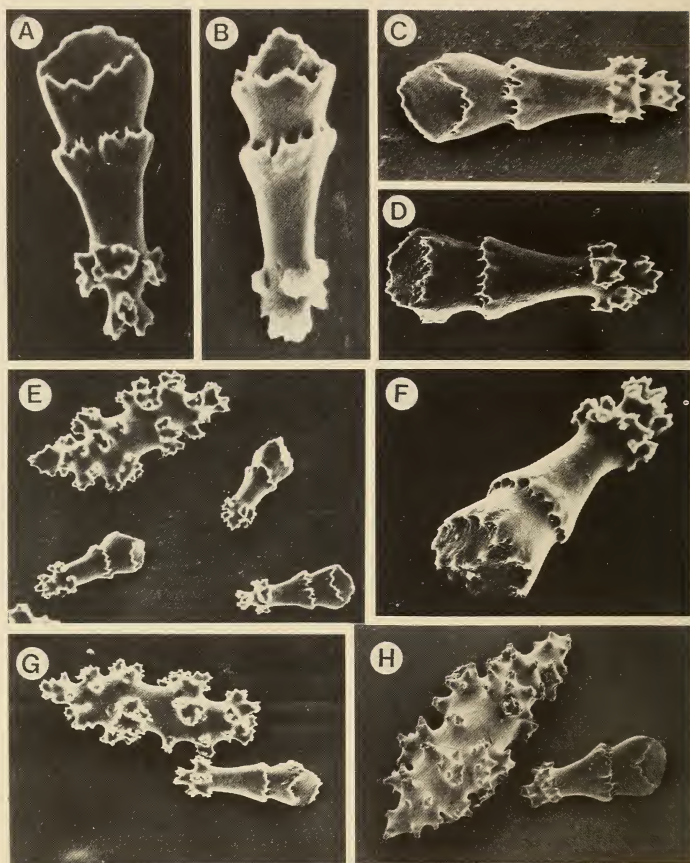


Fig. 28. Scanning electron micrographs. *Eunicella papillosa* (Esper, 1797), coenenchymal sclerites. A. 0,09 mm. B. 0,08 mm. C. 0,10 mm. D. 0,092 mm. E. Group of four sclerites 0,075–0,150 mm. F. 0,082 mm. G. Two sclerites 0,090–0,130 mm. H. Two sclerites, 0,0709–0,120 mm.

sparsely branched, often with a more lanky appearance and have fewer polyps, these being spaced further apart, possess calyces that are very prominent (1–2 mm long and 1–1.5 mm wide), and have a greater proportion of balloon clubs with broad terminal crowns. Despite those differences, I consider the various shallow- and deeper-water forms to be conspecific, since a gradual series of morphological differences is evident and as clear-cut boundaries cannot be established.

Eunicella papillosa differs from other southern African members of the genus by the possession of coenenchymal sclerites that are mainly small balloon clubs with two crowns (0.08–0.10 mm in length).

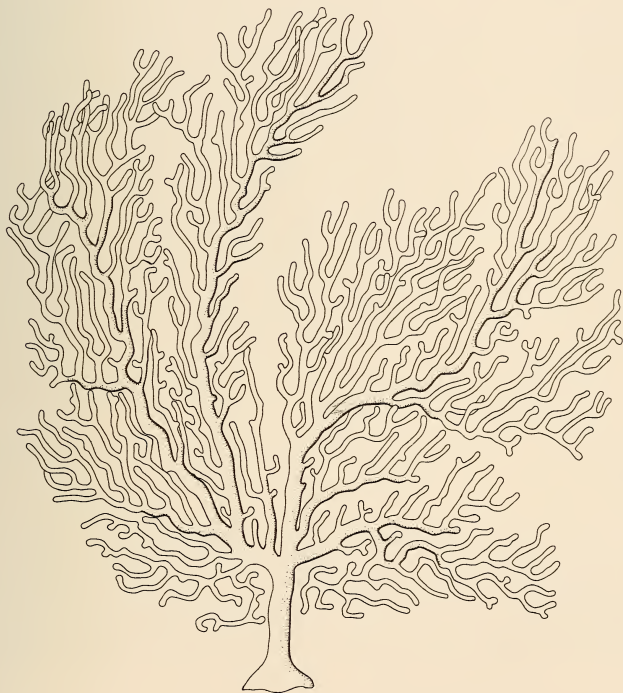


Fig. 29. *Eunicella tricornata* Velimirov, 1971. An entire colony, 300 mm in length.

Eunicella tricornata Velimirov, 1971

Figs 1F, 29–32

Gorgonia papillosa (non Esper, 1797) K  liker, 1865 (*part.*), pl. 18 (fig. 27b).*Eunicella albicans* (non K  liker, 1865) Molander, 1929: 10, figs 1–2. Broch, 1939: 27.*Eunicella alba* (non Esper, 1796) Broch, 1939: 27.*Eunicella tricornata* Velimirov, 1971: 269, figs 3–4.*Material*

SAM–H3297, off Sunny Cove, False Bay (34  09'S 18  26'E), 10 m, 23 April 1983, 1 colony, SCUBA, G. C. Williams. SAM–H3346, Algoa Bay (33  50'S 25  40'E), 11 m, 20 May 1984, 1 colony, SCUBA, G. C. Williams. SAM–H3333, Algoa Bay (33  50'S 25  40'E), 11 m, May 1984, 1 dried colony, SCUBA, T. M. Gosliner and G. C. Williams.

Description

Colonies examined range in length from 110 mm to 420 mm. Colonies grow upright. Branching planar, dichotomous, arising from a single basal main stem. Branches mostly flattened in plane of colony. Ultimate branches mostly cylindri-

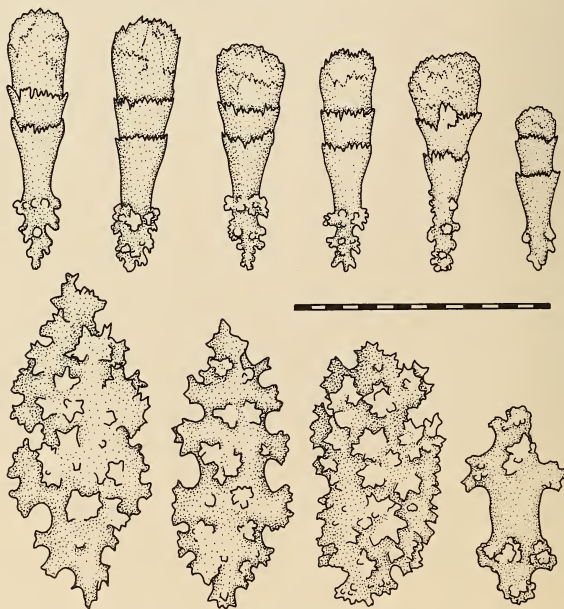


Fig. 30. *Eunicella tricornata* Velimirov, 1971. Coenenchymal sclerites. Scale bar = 0,15 mm.

cal to slightly flattened. Branches usually conspicuously sinuous, especially in larger colonies (>25 mm in height). Anastomosis occurs only rarely. Polyps numerous on all sides of branches, forming hemispherical calyces or low rounded protuberances (<1,00 mm in length). Polyps also capable of total retraction into coenenchyme. Coenenchymal sclerites are elongate balloon clubs with three crowns, 0,10–0,15 mm long, and robust, often copiously tuberculated girdled spindles, 0,12–0,20 mm long. Colony colour vivid orange in life, fading to white or cream-white in alcohol.

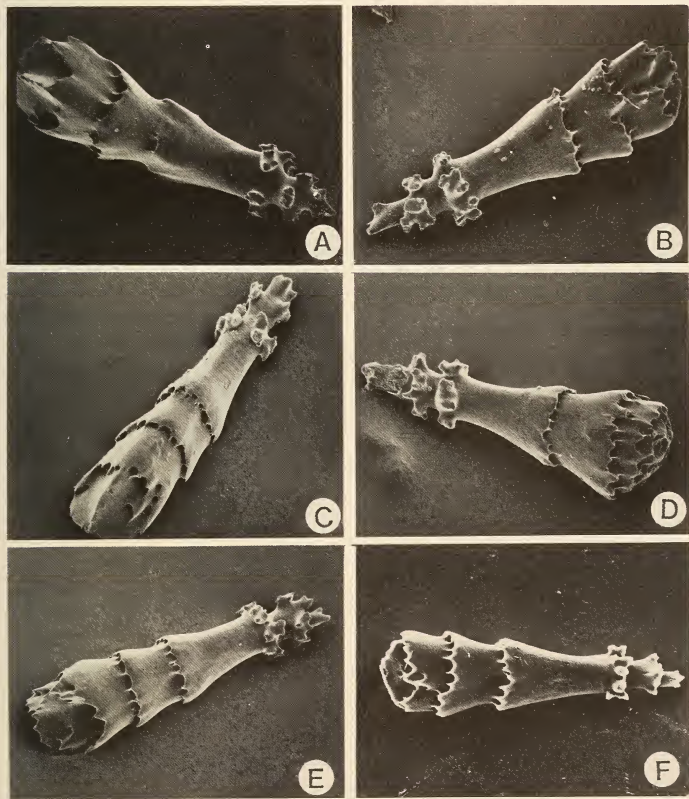


Fig. 31. Scanning electron micrographs. *Eunicella tricornata* Velimirov, 1971; coenenchymal sclerites. A. 0,105 mm. B–C. 0,11 mm. D. 0,10 mm. E. 0,115 mm. F. 0,11 mm.

Distribution

South coast of South Africa, from False Bay to East London, 9–36 m in depth. Common in False Bay, off Cape Agulhas, and in Algoa Bay (Williams in press *a*). The type locality is False Bay.

Remarks

Eunicella tricornata differs from other southern African *Eunicella* species by the possession of elongate balloon clubs (0,1–0,15 mm long) in the coenenchyme; these have three crowns.

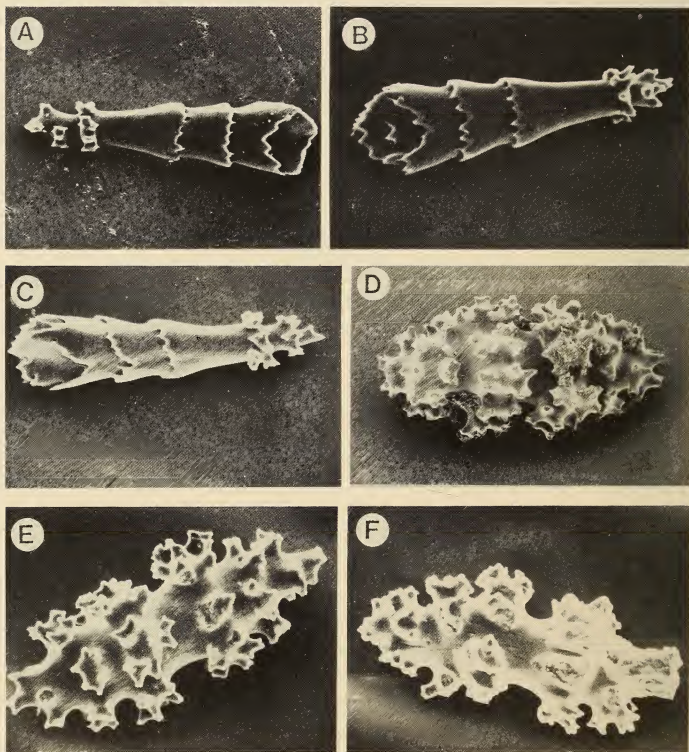


Fig. 32. Scanning electron micrographs. *Eunicella tricornata* Velinurov, 1971; coenenchymal sclerites. A. 0,125 mm. B. 0,120 mm. C. 0,145 mm. D. 0,130 mm. E. 0,150 mm. F. 0,135 mm.

Genus *Leptogorgia* Milne Edwards & Haime, 1857

Leptogorgia Milne Edwards & Haime, 1857: 163. Kükenthal, 1924: 323. Grasshoff, 1988: 97 (Lit!).

Lophogorgia Milne Edwards & Haime, 1857: 167. Kükenthal, 1924: 322.

Filigorgia Stiasny, 1937: 307; 1939: 301. Bayer, 1956: F206.

Diagnosis

Sclerites of the coenenchyme are symmetrical radiates (capstans) or spindles with whorls of tubercles that are symmetrically sculptured. Adjacent tubercles do not fuse to form discs.

A genus of at least eight species of the Mediterranean, Atlantic, and southern Africa and the subantarctic.

Type species. Gorgonia viminalis Pallas, 1766; Mediterranean Sea.

Leptogorgia barnardi Stiasny, 1940

Figs 33–36

Leptogorgia barnardi Stiasny, 1940: 26, text-fig. D, pl. 4 (figs 18–19).

Material

SAM-H1285, St Francis Bay, southern Cape Province (34°05'S 25°05'E), 62 m, 11 May 1906, 1 colony, large trawl, S.S. *Pieter Faure* survey, PF 18834. SAM-H3266, Gansbaai, south-western Cape Province (34°25'S 19°15'E), 33 m, 10 October 1983, 1 colony, dredge, Sea Fisheries Research Institute. SAM-H3926, off Cape Agulhas (34°50'S 20°10'E), 53 m, 24 February 1985, 1 colony, SCUBA, W. R. Liltved, Sea Fisheries Research Institute, Line Fish Survey. SAM-H3927, off Cape Agulhas (34°50'S 20°10'E), 33 m, 24 February 1985, 2 colonies, SCUBA, W. R. Liltved, Sea Fisheries Research Institute, Line Fish Survey. SAM-H3928, off Cape Agulhas (34°50'S 20°10'E), 30 m, 11 February 1985, 5 colonies, SCUBA, W. R. Liltved, Sea Fisheries Research Institute, Line Fish Survey.

Description

The colonies examined measure 210–320 mm in length. Colonies are upright, lank in appearance. Branching is dichotomous and planar. Anastomosis not present. Most branching takes place in the proximal region of the colony above the single basal stem. The terminal branches are long, thin, whip-like and cylindrical (1.0–2.0 mm in diameter; up to 200 mm in length). Basal main stem cylindrical, rarely slightly flattened. Polyps numerous, present on all sides of branches, capable of total retraction into coenenchyme, rarely forming low rounded calyces (<1.0 mm high). Coenenchymal sclerites are mainly elongate capstans with whorls of tubercles well-separated (0.06–0.16 mm in length). Colony colour permanent white.



Fig. 33. *Leptogorgia barnardi* Stiasny, 1940. An entire colony, 240 mm in height.

Distribution

Presently known from four localities on the South African south coast—Gansbaai, Cape Agulhas, St Francis Bay, and Cape Morgan. Stiasny (1940: 26) recorded the holotype from Cape Morgan (border of Cape Province and Transkei) from 93 m in depth.

Remarks

Leptogorgia barnardi can be distinguished from other southern African *Leptogorgia* species by the possession of many coenenchymal sclerites that are long thin capstans with well-separated whorls of tuberculation, white colony coloration, and dichotomous branching mostly in the proximal region of the colony with long thin terminal branches.



Fig. 34. *Leptogorgia barnardi* Stiasny, 1940. An entire colony, 350 mm in height.

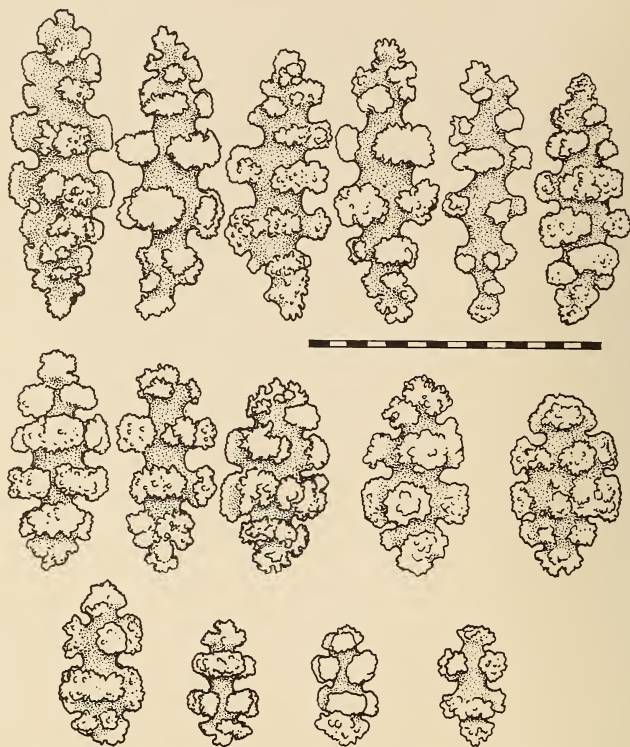


Fig. 35. *Leptogorgia barnardi* Stiasny, 1940. Coenenchymal sclerites. Scale bar = 0,15 mm.

Leptogorgia capensis (Hickson, 1900)

Figs 37–39

Gorgonia capensis Hickson, 1900: 83, pl. 5 (figs A, A', A'', A'''). Thomson, 1911: 887. Stiasny, 1940: 29, pl. 2 (figs 9–10).

Lophogorgia capensis Molander, 1929: 11, fig. 3. Tixier-Durivault, 1954: 626. Day *et al.*, 1970: 16.

Leptogorgia capensis Stiasny, 1940: 29, text-fig. F.

Material

SAM-H1315, lectotype (designated herein), off Cape St Blaize, south coast of Cape Province (34°15'S 22°10'E), 73 m, 8 June 1898, 1 colony, large otter trawl, S.S. *Pieter Faure* survey, PF 28. SAM-H657, paralectotype (designated

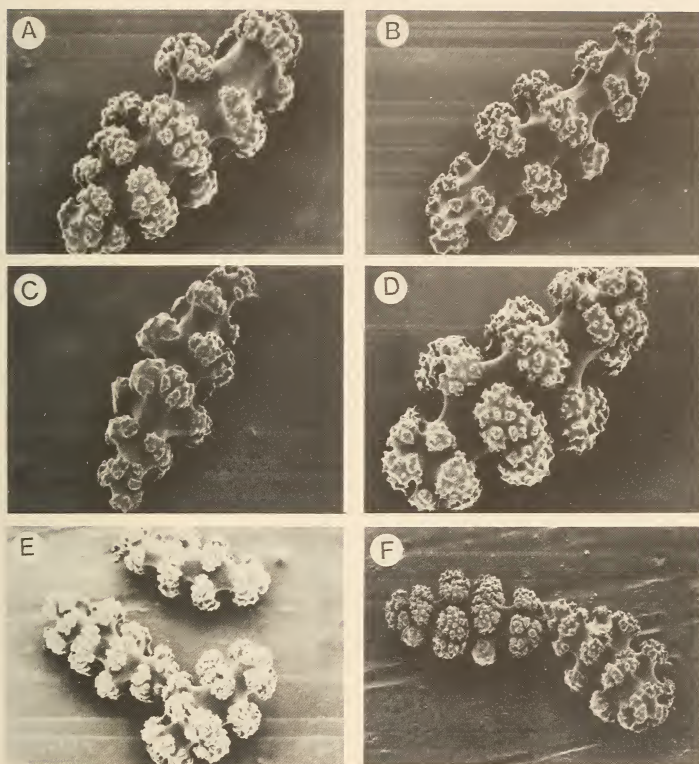


Fig. 36. Scanning electron micrographs. *Leptogorgia barnardi* Stiasny, 1940, coenenchymal sclerites. A. 0.122 mm. B. 0.125 mm. C. 0.11 mm. D. 0.095 mm. E. Group of three sclerites 0.080–0.085 mm. F. Two sclerites 0.085–0.090 mm.

herein), same data as SAM-H1315, 1 fragmented colony. SAM-H3226, False Bay, south-western Cape Province ($34^{\circ}12.8'S$ $18^{\circ}36.5'E$), 46 m, 10 September 1953, 1 fragmented colony, dredge, University of Cape Town Ecological Survey. SAM-H3921, Algoa Bay ($33^{\circ}50'S$ $25^{\circ}50'E$), depth not recorded, October 1983, 1 dried colony, bottom trawl, *Ocean Pearl*.

Description

Colonies examined measure 130–330 mm in length. Colonies grow upright but present a lank appearance due to the long and thin ultimate branches

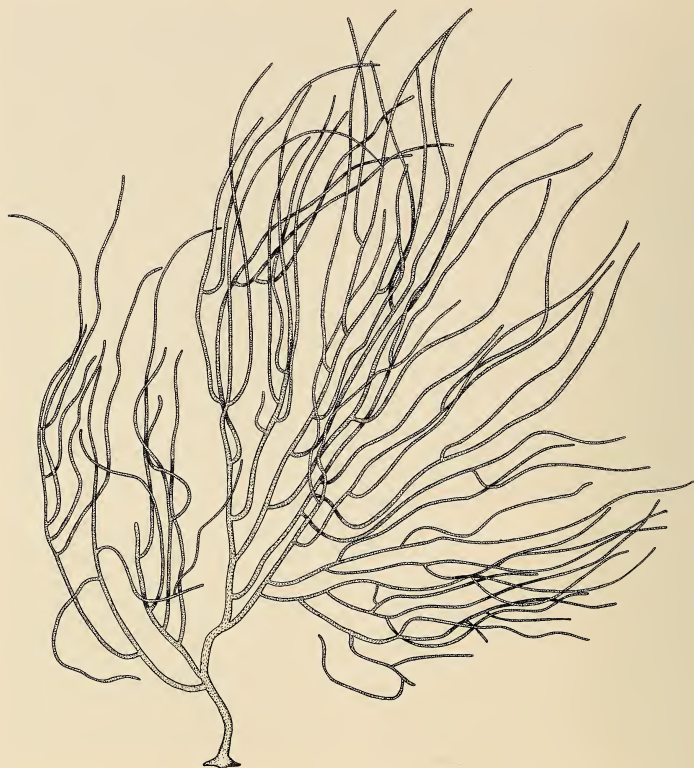


Fig. 37. *Leptogorgia capensis* (Hickson, 1900). An entire colony, 340 mm in height.

(1,5–2,5 mm in diameter and up to 170 mm long) that may be somewhat drooping. Branching is planar and dichotomous to slightly lateral. Branches are cylindrical and arise from a single basal stem. Anastomosis apparently does not occur. Retracted polyps may form low rounded protuberances (<1,0 mm high) or totally retract into coenenchyme leaving minute slits (<0,5 mm long) on the surfaces of the branches. Polyps present on all sides of branches. Coenenchymal sclerites are relatively large eight radiates (capstans) or girdled spindles, 0,07–0,17 mm in length. Colony colour permanent yellow due to sclerite coloration. Axis deep reddish-brown.

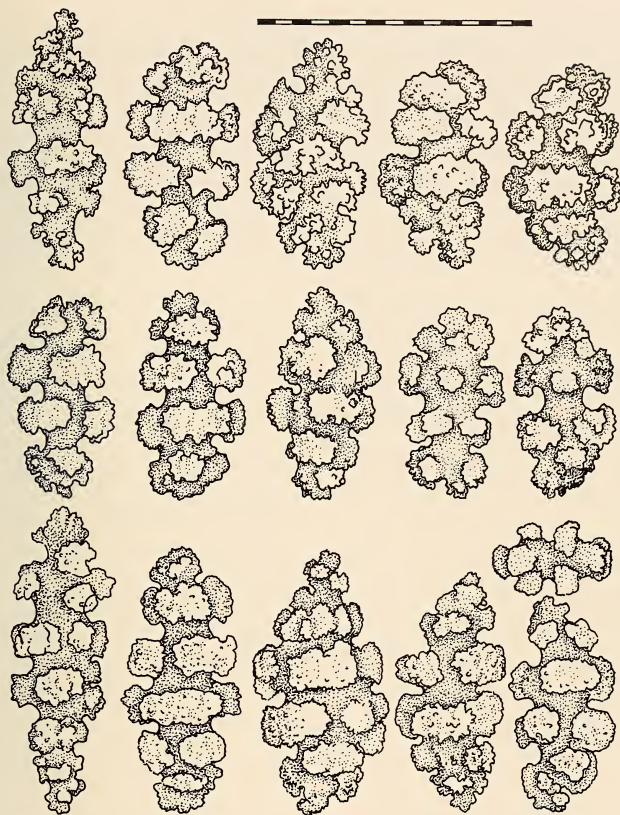


Fig. 38. *Leptogorgia capensis* (Hickson, 1900). Coenenchymal sclerites. Scale bar = 0,15 mm.

Distribution

Presently known from the south coast of South Africa from False Bay to Algoa Bay, 46–73 m in depth. Type locality Cape St Blaize, Cape south coast.

Remarks

This species has sclerites with symmetrical whorls of tubercles and no scaphoids (C-shaped spindles with tubercles on the convex side modified or reduced) are present. Thus it is assignable to the genus *Leptogorgia* (which may have

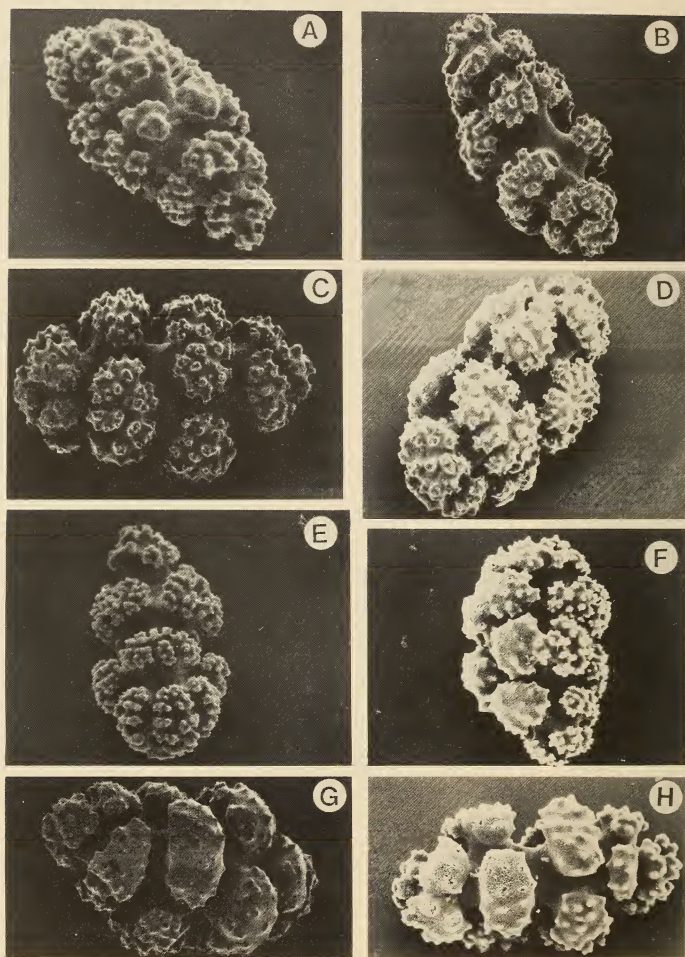


Fig. 39. Scanning electron micrographs. *Leptogorgia capensis* (Hickson, 1900); coenenchymal sclerites. A. 0,105 mm. B. 0,08 mm. C. 0,072 mm. D. 0,062 mm. E. 0,10 mm. F. 0,085 mm. G. 0,070 mm. H. 0,085 mm.

some unilaterally spinose spindles), not *Gorgonia* (which has scaphoids as well as capstans).

Leptogorgia capensis is distinguished from other southern African *Leptogorgia* species by the possession of coenenchymal sclerites of relatively uniform shape and size that are large robust capstans (mostly 0.10–0.17 mm in length), lanky appearance with long thin ultimate branches (c. 2.0 mm in width and up to 170 mm long), dichotomous to slightly lateral branching, and yellow colony coloration.

Leptogorgia palma (Pallas, 1766)

Figs 1C, 40–45

Gorgonia palma Pallas, 1766: 189. Esper, 1791–99 (*part.*): 32, pl. 5. K  lliker, 1865: 139.

Gorgonia flammea Ellis & Solander, 1786: 80, pl. 11. Hickson, 1900: 81, pl. 5 (fig. B). Thomson, 1911: 888. 1917: 36, pl. 1 (figs 3, 7), pl. 4 (fig. 6).

Lophogorgia palma Milne Edwards & Haime, 1857: 167.

Lophogorgia crista M  bius, 1861: 7, pl. 2 (figs 1–7). K  enthal, 1919: 638, text-fig. 288, pl. 32 (fig. 18), pl. 33 (fig. 19); 1924: 322. Stiasny, 1940: 22, text-fig. B, pl. 3 (figs 13–15). Tixier-Durivault, 1954: 625.

Leptogorgia crista Verrill, 1869b: 421.

Leptogorgia flammea Verrill, 1869b: 421.

Lophogorgia flammea Wright & Studer, 1889: 150, 151. Bielschowsky, 1918: 18; 1929: 77. Molander, 1929: 11. Stiasny, 1940: 24, text-fig. C, pl. 3 (figs 16–17). Tixier-Durivault, 1954: 625. Day *et al.*, 1970: 16. Day, 1974: 35, fig. p. 35. Branch & Branch, 1981: 151, pl. 33.

Leptogorgia palma Grasshoff, 1988: 115, pl. 7 (fig. 4), pl. 10 (fig. 6), pl. 13 (fig. 3).

Material

SAM-H3670, off East London (33  02'S 27  56'E), 30–35 m, 16 July 1984, 1 colony, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM-H1326, Algoa Bay (33  53'S 25  51'E), 47 m, 6 December 1898, 1 dried colony, large trawl, S.S. *Pieter Faure* survey, PF 706B. SAM-H3343, Algoa Bay (33  50'S 25  40'E), 11 m, 20 May 1984, 5 colonies, SCUBA, G. C. Williams. SAM-H3344, Algoa Bay (33  50'S 25  40'E), 11 m, 20 May 1984, 4 colonies, SCUBA, G. C. Williams. SAM-H3342, off Danger Point, south-western Cape Province (34  35'S 19  20'E), 25 m, 24 April 1984, 4 colonies, SCUBA, W. R. Liltved, Sea Fisheries Research Institute, Line Fish Survey. SAM-H3600, Sunny Cove, False Bay (34  09'S 18  27'E), 10 m, 23 April 1983, 1 colony, SCUBA, G. C. Williams.

Description

Colonies examined range in length from 120 mm to 1 100 mm. Colonies are upright. Branching is sparse to copious, planar and pinnate, dichotomous, or lateral. Branches arise from a single basal stem that is usually conspicuously flattened parallel to the plane of the colony and up to 30 mm wide. Primary branches also usually flattened. Ultimate branches are mostly cylindrical or slightly flattened, often very flexible (2–4 mm in width, 25–200 mm in length). Anastomosis does not occur. Retracted polyps form very low rounded protuberances or retract completely into coenenchyme, forming minute slits on the

surfaces of the branches (0,5 mm long). Polyps are present on all sides of ultimate branches, but are usually present only on opposite edges of the flattened lower branches and basal stem, and not present or only scattered sparingly on the flattened faces of these branches. Coenenchymal sclerites are mainly compact capstans (0,04–0,10 mm long). A few capstans may be less compact with whorls of tubercles well spaced. Colony colour is vivid orange, red-orange, or deep brick-red; permanent due to sclerite coloration. Axis is dark brown to black.

Distribution

Commonly encountered along the coast of South Africa from the west coast of the Cape Peninsula to Durban, Natal; intertidal to 100 m in depth (Williams in press a). Type locality Cape of Good Hope, but exact locality not known.



Fig. 40. *Leptogorgia palma* (Pallas, 1766). An entire colony, 250 mm in height, showing pinnate branching.



Fig. 41. *Leptogorgia palma* (Pallas, 1766). An entire colony, 350 mm in height, showing pinnate and lateral branching.

Remarks

Leptogorgia palma is a highly variable species. *Lophogorgia crista* was previously differentiated on the basis of dichotomous branching and dark-red coloration, whereas *L. palma* was defined by pinnate branching and red-orange coloration. After having examined a large suite of specimens from throughout the ranges of both forms (both older material as well as a great many recently collected colonies), I conclude that the two forms are conspecific as no clear-cut morphological boundaries can be substantiated. Some colonies have dichotomous branching and are orange in colour, whereas others are dark-red with pinnate branching. Also, some colonies do not exhibit distinct dichotomous or pinnate branching but are intermediate, with irregular or lateral branching. The size and shape of the coenenchymal capstans of the two forms are virtually indistinguishable.

Thomson & Henderson (1906: 432, pl. 32 (figs 5-7)) recorded *Lophogorgia crista* from the Cape Verde Islands, and noted several differences between their material and South African specimens. I consider this a dubious record.

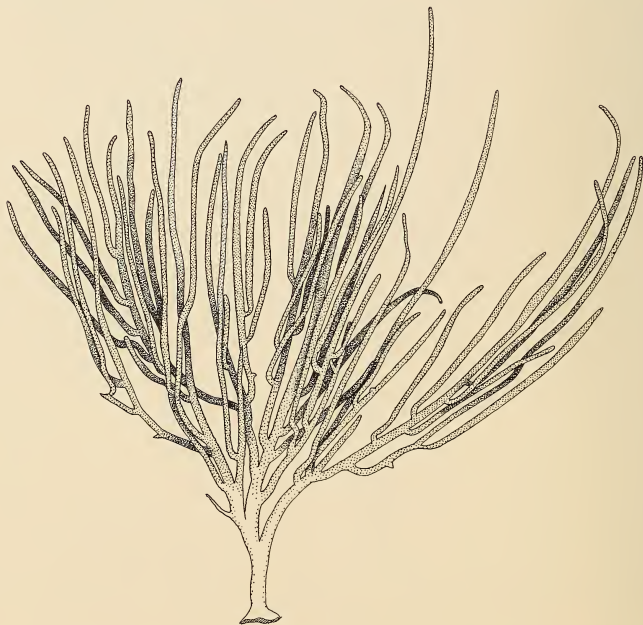


Fig. 42. *Leptogorgia palma* (Pallas, 1766). An entire colony, 210 mm in height, showing dichotomous branching.

Leptogorgia palma is distinguished from other southern African members of the genus by the possession of red-orange to wine-red coloration, coenenchymal sclerites that are mainly compact capstans (0,04–0,10 mm long), ultimate branches that are 25–200 mm long, and anastomosis is not present. Older colonies may exceed 2 m in height, this being the largest of all southern African gorgonians.

The orange pinnately branched form is a common and conspicuous constituent of horizontal reefs and the sides of boulders in False Bay. Both the orange

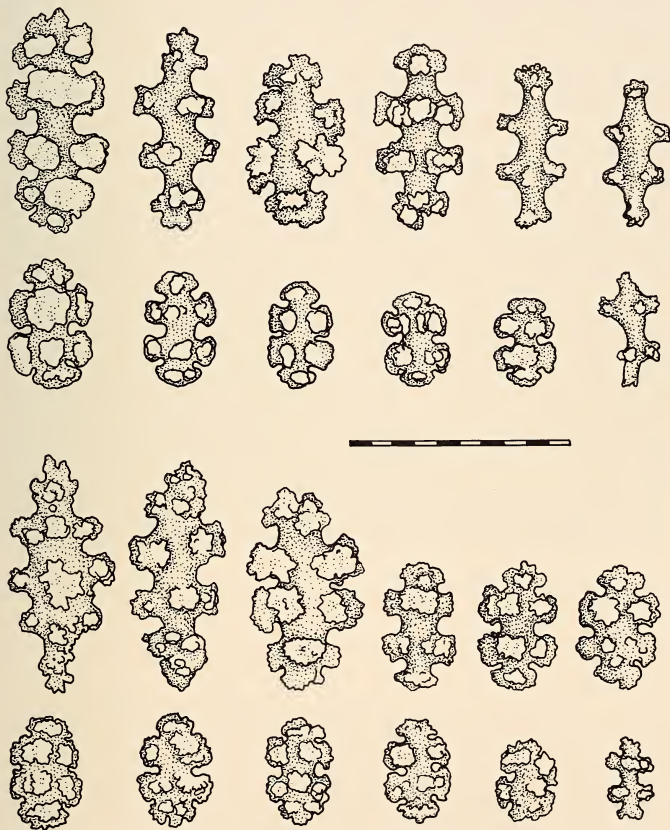


Fig. 43. *Leptogorgia palma* (Pallas, 1766); coenenchymal sclerites. Scale bar = 0,1 mm.

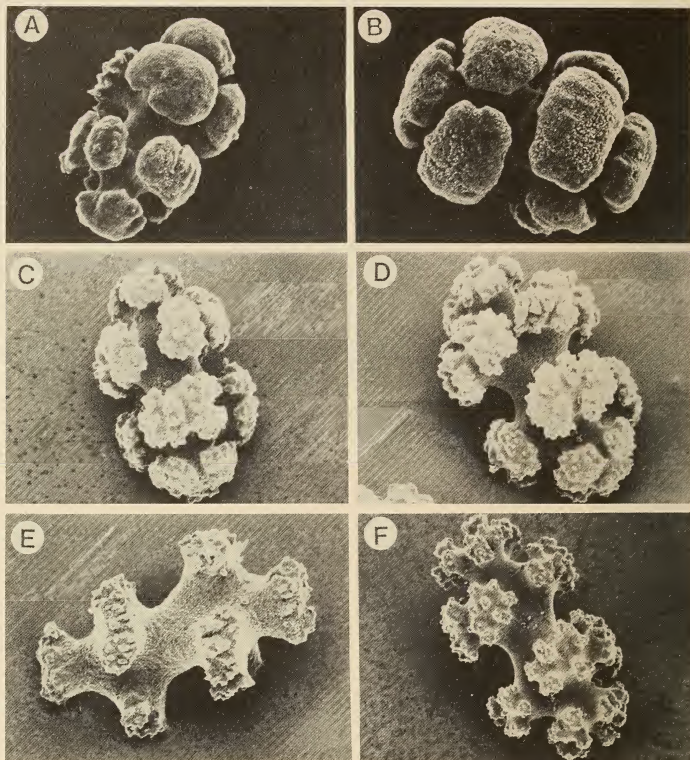


Fig. 44. Scanning electron micrographs. *Leptogorgia palma* (Pallas, 1766); coenenchymal sclerites. A. 0,048 mm. B. 0,037 mm. C. 0,04 mm. D. 0,042 mm. E. 0,039 mm. F. 0,065 mm.

pinnate form and the wine-red, dichotomously branched form are common on shallow reefs in Algoa Bay.

Leptogorgia gilchristi (Hickson, 1904) comb. nov.

Figs 46–49

Eugorgia Gilchristi Hickson, 1904: 230, pl. 9 (figs 15, 19). Thomson, 1917: 38.

Leptogorgia alba var. *capensis* Thomson, 1917: 29.

Leptogorgia aurata Thomson, 1917: 32, pl. 1, (fig. 5), pl. 4 (fig. 2).

Eugorgia lineata Thomson, 1917: 39, pl. 2 (fig. 3), pl. 5 (fig. 2).

Eugorgia gilchristi: Kükenthal, 1924: 347. Stiasny, 1940: 27, text-fig. E.

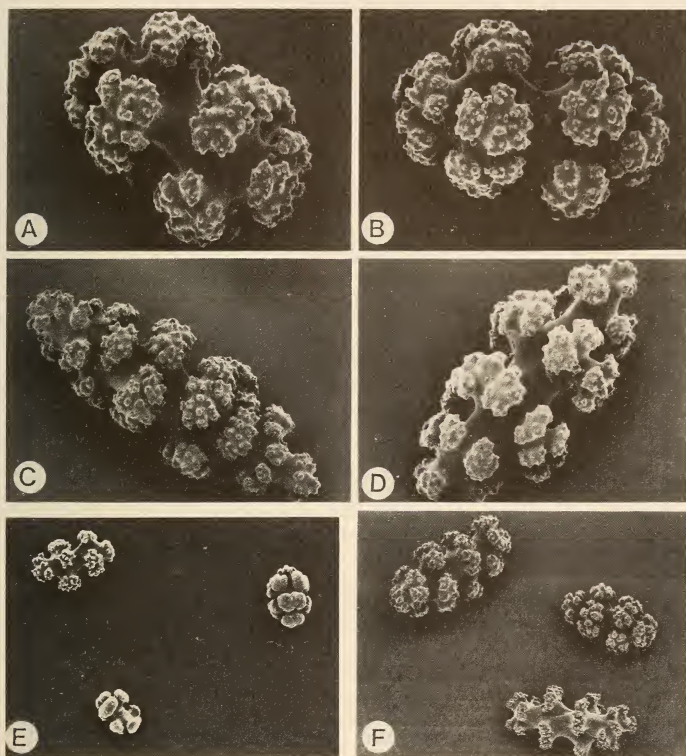


Fig. 45. Scanning electron micrographs. *Leptogorgia palma* (Pallas, 1766); coenenchymal sclerites. A. 0,04 mm. B. 0,045 mm. C. 0,12 mm. D. 0,08 mm. E. Group of three sclerites, 0,035–0,060 mm. F. Group of three sclerites, 0,06–0,08 mm.

Material

SAM-H3382, off Danger Point, south-western Cape Province (34°41'S 19°20'E), 44 m, 16 April 1984, 1 colony, SCUBA, W. R. Liltved. SAM-H3925, off Cape Agulhas (34°50'S 20°10'E), 45 m, 27 February 1985, 1 colony, SCUBA, W. R. Liltved, Sea Fisheries Research Institute, Line Fish Survey. SAM-H969 (holotype of *Eugorgia lineata*), off Cape St Blaize (34°12'S 22°10'E), 27–33 m, 15 July 1898, 5 colonies, dredge, S.S. *Pieter Faure* survey, PF 210. SAM-H3340, Algoa Bay (33°50'S 25°40'E), 11 m, 20 May 1984,

1 colony, SCUBA, G. C. Williams. SAM-H978 (holotype), St Francis Bay ($34^{\circ}5'20''\text{S}$ $25^{\circ}43'\text{E}$), 95 m, 1 November 1898, 1 partial colony, dredge, S.S. *Pieter Faure* survey, PF 622. SAM-H982 (holotype of *Leptogorgia aurata*) and SAM-H983 (type specimen of *Leptogorgia alba* var. *capensis*), Durnford Point, Natal ($28^{\circ}25'\text{S}$ $32^{\circ}30'\text{E}$), 82 m, 28 February 1901, 1 colony each, dredge, S.S. *Pieter Faure* survey, PF 12164 and PF 12165.

Description

Colonies examined range in length from 110 mm to 360 mm. Colonies grow upright. Branching is planar and pinnate, bushy or arising from a single basal stem. Branching is very copious, anastomoses are frequent. Proximal branches and main stem often flattened. Ultimate branches mostly cylindrical, 5–25 mm in length, often curving and ascending. Polyps present on all sides of ultimate branches, usually forming hemispherical protuberances during retraction. Flattened faces of proximal branches mostly free of polyps. Coenenchymal sclerites are capstans exhibiting a wide range of sizes, 0.03–0.13 mm in length. Some of the larger ones may be slightly bent. Colony colour highly variable: bright

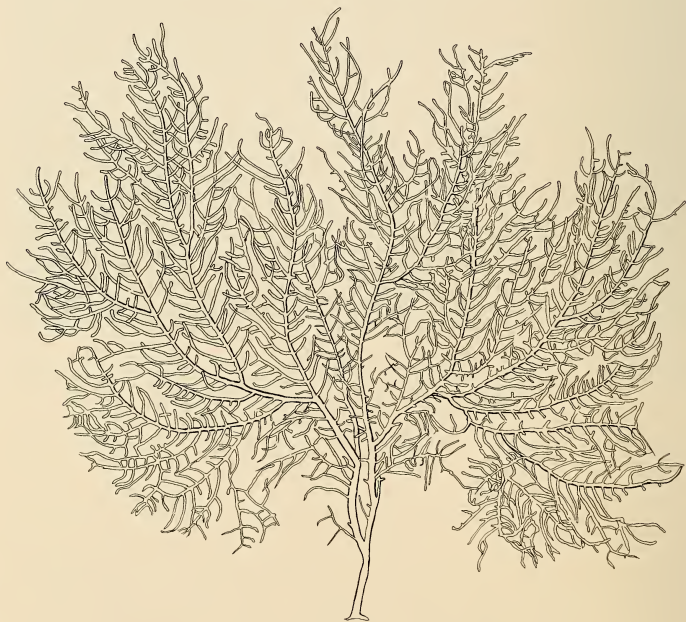


Fig. 46. *Leptogorgia gilchristi* (Hickson, 1904). An entire colony, 300 mm in height.

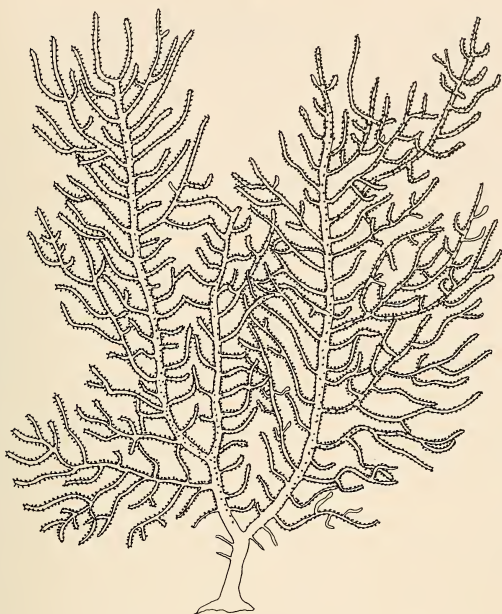


Fig. 47. *Leptogorgia gilchristi* (Hickson, 1904). An entire colony, 165 mm in height.

yellow, white, pink, mauve, rust-orange, brick-red. Some colonies are bicoloured white and pink, yellow and orange, on white and red. Colour is conserved in alcohol.

Distribution

Recorded from the south and east coasts of South Africa from Danger Point to northern Natal, 10–95 m in depth. Type locality is St Francis Bay, Cape south coast.

Remarks

Hickson (1904: 230) described *Eugorgia gilchristi* from St Francis Bay (southern Cape Province) and Thomson (1917: 39) described *Eugorgia lineata* from Cape St Blaize (also southern Cape Province). Examination of both Hickson's and Thomson's type specimens show that neither belong to the genus *Eugorgia* Verrill, 1868, as double wheel sclerites (modified capstans with tubercles of two whorls fused into discs or wheels) are absent. The capstans are

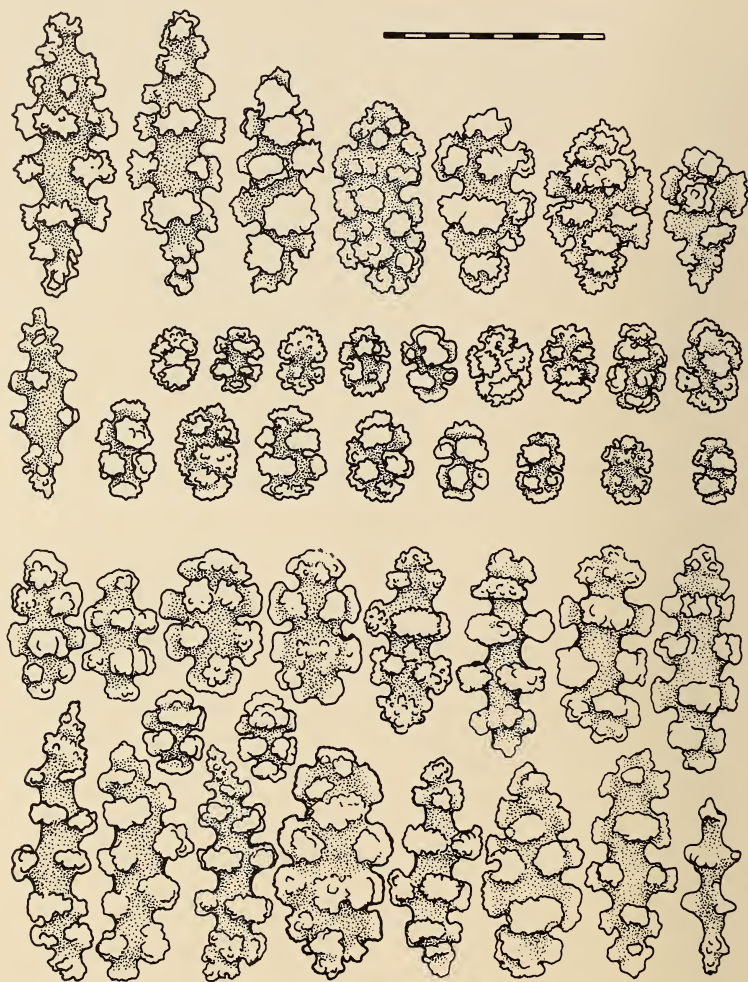


Fig. 48. *Leptogorgia gilchristi* (Hickson, 1904). Coenenchymal sclerites. Scale bar = 0,1 mm.

virtually all symmetrically sculptured (even though some may be slightly bent along the longitudinal axis). Both specimens must therefore be allocated to the genus *Leptogorgia*. Comparison of the two specimens shows no appreciable differences, except for the size of the calyces, which vary depending on the state of retraction. I therefore consider *Eugorgia lineata* to be a junior synonym of *Leptogorgia gilchristi*. Comparison of the types of *Leptogorgia alba* var. *capensis* Thomson, 1917 (p. 29), and *Leptogorgia aurata* Thomson, 1917 (p. 32) with Hickson's type shows very minor differences in calyx and sclerite size, differences that can be accounted for by degree of retraction and intraspecific

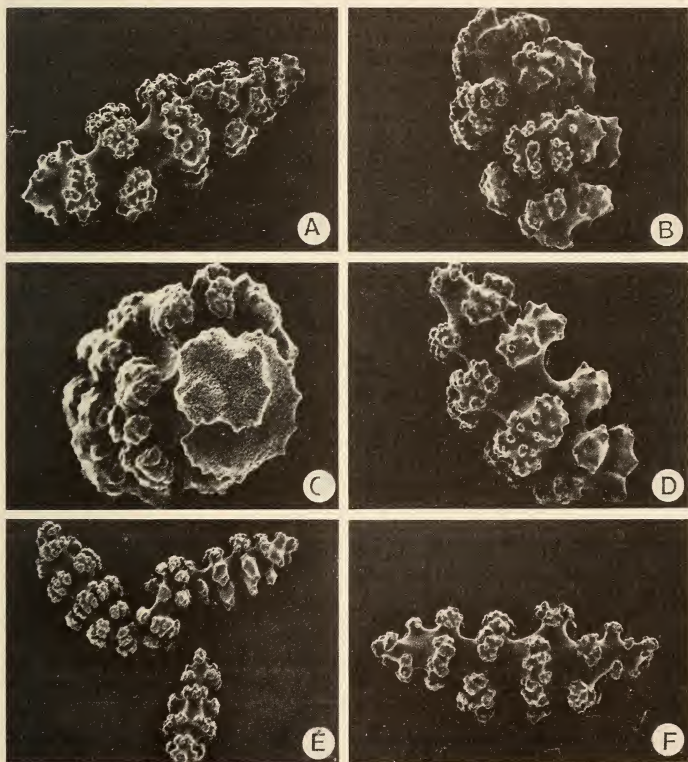


Fig. 49. Scanning electron micrographs. *Leptogorgia gilchristi* (Hickson, 1904); coenenchymal sclerites. A. 0,11 mm. B. 0,05 mm. C. 0,035 mm. D. 0,08 mm. E. Group of four sclerites, 0,065–0,100 mm. F. 0,11 mm.

variation. I therefore consider these two species to be conspecific with *Leptogorgia gilchristi*.

Leptogorgia gilchristi is distinguished from other southern African species of the genus by the possession of copious pinnate branching with ascending and curved ultimate branches (<25 mm long) and anastomosis common, a broad range of coenenchymal sclerite size (0.03–0.13 mm in length), and extremely variable colony coloration.

Genus *Rumphella* Bayer, 1955

Rumphella Bayer, 1955: 212.

Diagnosis

Sclerites of the coenenchyme are mainly conspicuous wart clubs, some radiates also present.

An Indo-Pacific genus of three or four species.

Type species. *Plexaura aggregata* Nutting, 1910; Malay Archipelago.

Remarks

An unidentified species has recently been collected at Sodwana Bay, northern Natal. It is present in sandy gullies or depressions in coral reefs at 15–18 m in depth (Williams 1989: 152; in press c).

This represents a new record for the genus *Rumphella* in southern Africa.

Other species of the family Gorgoniidae

At present, only three gorgoniid genera are known from southern Africa: *Eunicella*, *Leptogorgia*, and *Rumphella*. Several other species have been described or reported from the region. These include *Lophogorgia luetkeni* Wright & Studer, 1889 (in Thomson, 1917), *Leptogorgia africana* Thomson, 1917, *Leptogorgia rigida* Verrill, 1868–1870 (in Thomson, 1917), *Leptogorgia tenuissima* Kükenthal, 1919, *Leptogorgia pusilla* Kükenthal, 1919, and *Leptogorgia abietina* Kükenthal, 1919. Of these, the only material currently available for examination is Thomson's specimen identified as *Lophogorgia luetkeni* (from False Bay), and his types of *Leptogorgia africana* (East London) and *Leptogorgia rigida* (border of eastern Cape and Transkei). The three specimens are dried and badly fragmented; thus positive identification of the material is very difficult. However, an examination of branching pattern and sclerites shows *Leptogorgia africana* to be similar to *Leptogorgia gilchristi*, whereas *Leptogorgia rigida* and *Lophogorgia luetkeni* resemble *Leptogorgia palma*.

Several specimens present in the South African Museum collection (both older ones as well as recently collected material) cannot with certainty be allocated to a particular species. The full extent of morphological variability present within the four presently recognized southern African species of *Leptogorgia* has not been fully assessed but a considerable amount of intraspecific variation is apparent, particularly in *Leptogorgia flammea* and *L. gilchristi*.

Family **Ellisellidae** Gray, 1859

Axis composed of calcified concentric layers; sclerites and horn not present; central core not chambered. Colonies unbranched and whip-like, or branching dichotomous, pinnate or lyrate. Polyps monomorphic. Sclerites are primarily double heads, double cones, double stars and clubs.

About seven genera of the Atlantic and Indo-Pacific with at least two genera in southern Africa. The family is in need of revision.

Genus *Junceella* Valenciennes, 1855

Junceella Valenciennes, 1855: 14. Kükenthal, 1919: 857; 1924: 361 (Lit!).

Diagnosis

Colonies are flagelliform or sparsely dichotomously branched. Sclerites of the outer coenenchyme are distinct clubs, somewhat flattened, with rounded tubercles covering the head, and a whorl of tubercles surrounding the handle.

At least seven species of the Indo-Pacific.

Type species. *Gorgonia juncea* Pallas, 1766; Philippines.

Remarks

A single colony assignable to this genus has recently been collected from Sodwana Bay in northern Natal, at 37 m depth (Williams 1989: 142, in press c). The specimen has not been identified to species. It is orange-red in colour.

This represents a new record for the genus *Junceella* in southern Africa.

Other species of the family Ellisellidae

Thomson (1917: 43, pl. 5 (fig. 6)) identified material from Natal (113–146 m depth) as *Verrucella bicolor* Nutting, 1908, originally described from Hawaii. Two specimens in the South African Museum collection are identified as *Scirpearia furcata* and *S. flagellum* (*Scirpearia* is a synonym of *Ellisella* (Bayer, 1981: 945). At least three other ellisellid species (excluding *Junceella* sp.) have recently been collected from southern African waters (including material conforming to Thomson's description as well as the *Scirpearia* material). Because of the confused state of the taxonomy of the family Ellisellidae, none of this material can at present be reliably assigned to genus or species. Proper identification of southern African ellisellids requires extensive revisions of most of the recognized genera involving a large collection of specimens (Dr F. M. Bayer pers. comm.). The family Ellisellidae is presently known in southern Africa from East London, eastern Cape Province, to Sodwana Bay, northern Natal (37–567 m in depth).

Family **Chrysogorgiidae** Verrill, 1883

Axis composed of entirely calcified material in concentric lamellae. Surface smooth, glossy with a metallic or iridescent lustre. Polyps monomorphic. Scle-

rites are rods, scales, or plates, sometimes needle-like; others flat and broad. Holdfast is root-like (forms living in soft substrata) or disc-like (forms attached to hard objects).

Twelve genera of cosmopolitan distribution (many from great depth). At least five genera in southern Africa.

Genus *Chrysogorgia* Duchassaing & Michelotti, 1864

Chrysogorgia Duchassaing & Michelotti, 1864: 13, 21. Wright & Studer, 1889: 23. Versluys, 1902: 17. Kükenthal, 1919: 505; 1924: 388 (Lit!). Bayer, 1956: F216. Bayer & Stefani, 1988: 259.

Diagnosis

Colonies are erect and often bottlebrush-like in appearance. Branching is sympodial. The main stem has a zigzag appearance with the lateral branches arranged in a spiral fashion. Lateral branches relatively short, dichotomously branched. Polyps sparsely arranged on the lateral branches.

Sclerites are scales and prickly spindles. Main stem often bronze or copper-coloured with a lustrous iridescence, lateral branches and polyps whitish or yellowish.

A large genus of probably more than 50 species, mostly from deep water of the Atlantic and Indo-Pacific oceans.

Type species. *Chrysogorgia desbonni* Duchassaing & Michelotti, 1864; Lesser Antilles.

Remarks

An unidentified species of *Chrysogorgia* occurs from off Durban to northern Natal (722–1 200 m in depth).

The present work represents a new record for the genus in southern Africa.

Genus *Radicipes* Stearns, 1883

Radicipes Stearns, 1883: 97. Kükenthal, 1919: 540; 1924: 410 (Lit!). Bayer, 1956: F216. *Lepidogorgia* Verrill, 1884: 220. Versluys, 1902: 5. *Strophogorgia* Wright & Studer, 1889: 2.

Diagnosis

Colonies are very thin and whip-like, unbranched, and arise from a root-like holdfast. The roots ramify dichotomously. Polyps are arranged singly, sparsely and uniserially along the axis. The coenenchyme is often very thin. Sclerites are irregularly-shaped scales or spindles with smooth or slightly roughened surfaces. Colony colour usually whitish.

At least five species of the Atlantic and Indo-Pacific, usually from deep water.

Type species. *Radicipes pleurocristatus* Stearns, 1883; western Pacific.

Remarks

An unidentified species of *Radicipes* has recently been collected near Cape Vidal, northern Natal, at 600–810 m in depth. This represents a new record for the genus in southern Africa.

Genus *Simpsonella* Stiasny, 1940

Hicksonella Simpson, 1910: 682; preoccupied by *Hicksonella* Nutting, 1910.

Simpsonella Stiasny, 1940: 31.

Helicogorgia Bayer, 1981: 902, 938.

Diagnosis

Colonies usually unbranched and whip-like, or rarely with sparse lateral branching. Polyps uniserial to multiserial, longitudinally placed on one side of stem, leaving a naked track on the opposite side. Polyps clavate, non-retractile.

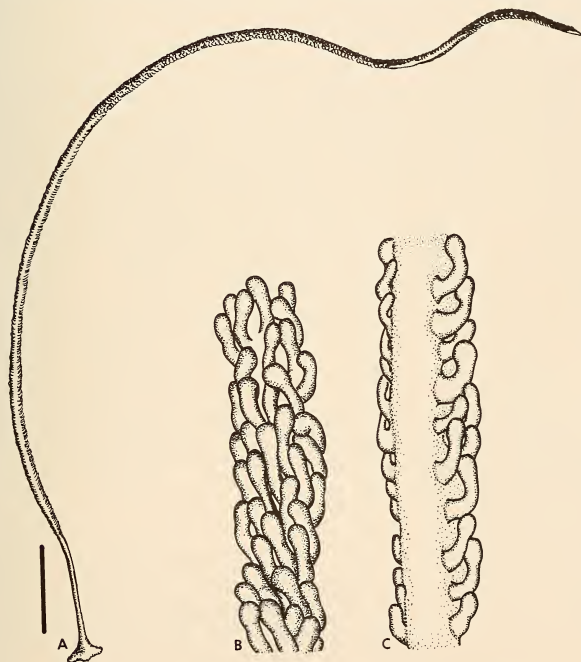


Fig. 50. *Simpsonella capensis* (Simpson, 1910). A. An entire colony; scale bar = 10 mm. B. Surface detail from middle of colony showing the side containing the polyps; length of figure 9,0 mm. C. Surface detail from middle of colony showing the side containing the bare tract; length of figure 9,2 mm.

Anthocodiae retractile into body of polyps. Sclerites are mainly tuberculated spindles and plates, often of irregular shape.

A genus of at least four species, eastern African coast from Zanzibar to East London. There is some doubt as to the familial status of this genus (Dr F. M. Bayer pers. comm.); the sclerites are unlike those of other chrysogorgiids.

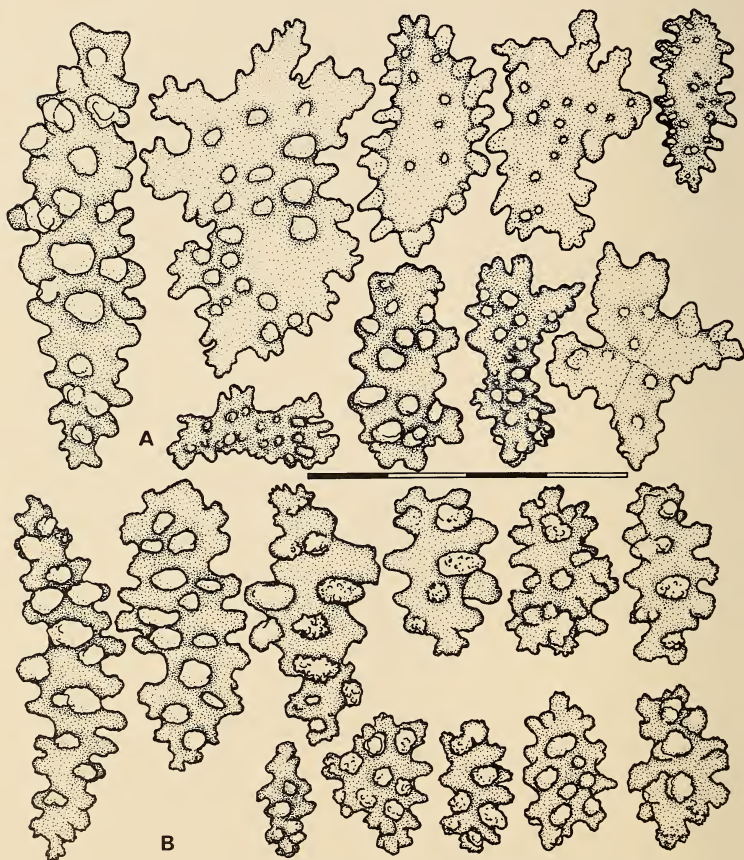


Fig. 51. *Simpsonella capensis* (Simpson, 1910). A. Sclerites from the calyx wall. B. Coenenchymal sclerites. Scale bar = 0,2 mm.

Type species. Juncella spiralis Hickson, 1904; South Africa.

Simpsonella capensis (Simpson, 1910)

Figs 50–52

Hicksonella capensis Simpson, 1910: 685, 688, pl. 13 (figs 6–7).

Simpsonella capensis Williams, in press b.

Material

SAM-H3932, off Gonubie, eastern Cape Province (33°04,7'S 28°07,2'E), 90 m, 17 July 1984, 1 colony, coll. G. C. Williams, R.V. *Meiring Naude*.

Description

The colony examined is 140 mm in length. The colony is flagelliform, unbranched, and stands upright but curved with a spiral twist toward the distal end. The axis is c. 1,5 mm in width. The maximum diameter of the colony, including the polyps, is 2,5 mm. The polyps are arranged multiserially along a longitudinal tract that covers approximately three-quarters of the circumference of the axis. The polyps are elongate and narrow and thus appear less crowded relative to other species. The polyps are slightly incurved and somewhat clavate 1,5 mm long, 0,32 mm wide proximally, and 0,46 mm wide distally. Sclerites of the polyps (0,09–0,25 mm long) are irregular plates with scalloped margins and rounded tubercles that are covered by fine punctations. Coenenchymal sclerites are elongate and mostly tuberculated spindles 0,06–0,20 mm in length. Colony colour cream-white.

Distribution

East London region to southern Natal (67–90 m in depth). Type locality southern Natal (red cliff near Morewood Cave).

Remarks

This species is distinguished by the possession of elongate and narrow polyps that are relatively openly spaced on the longitudinal polypiferous tract, and irregularly shaped, coarsely tuberculated spindles of the coenenchyme (0,06–0,20 mm long). (See remarks under *Simpsonella spiralis* (type species) regarding the generic designation adopted for this species.)

Simpsonella flagellata (Simpson, 1910)

Figs 53–55

Hicksonella flagellata Simpson, 1910: 684, 688, pl. 13 (figs 44–5).

Simpsonella flagellata Williams, in press b.

Material

SAM-H3929, off Port Edward, northern Transkei (31°06'S, 30°18'E), 125 m, 8 July 1985, 20 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*.

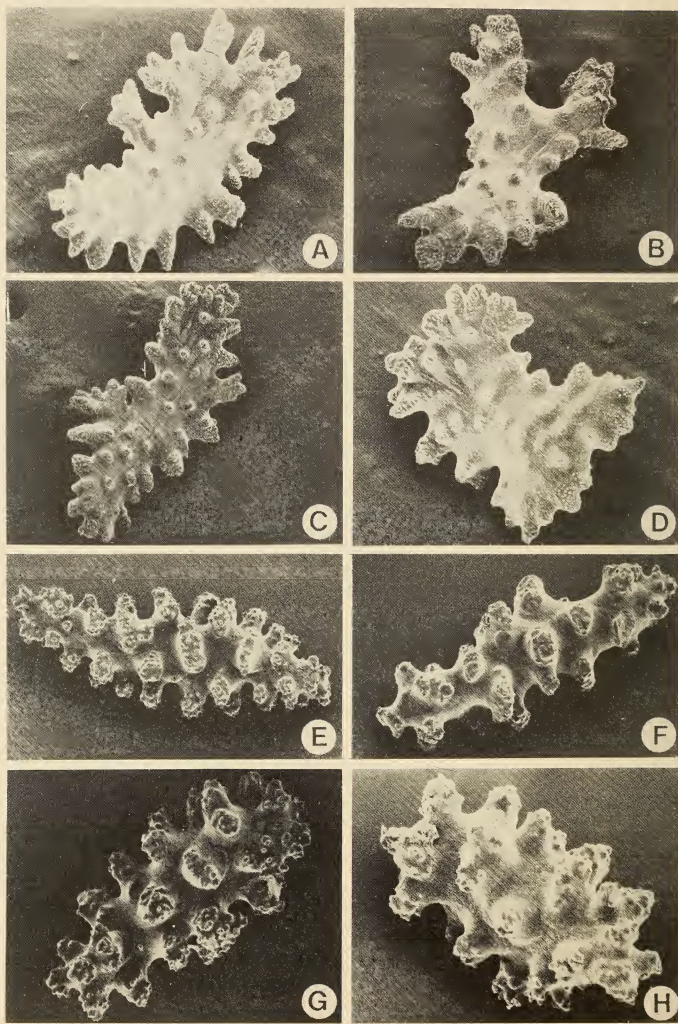


Fig. 52. Scanning electron micrographs. *Simpsonella capensis* (Simpson, 1910); sclerites. A-D. Sclerites from the polyp walls. A. 0,15 mm. B. 0,11 mm. C. 0,19 mm. D. 0,125 mm. E-H. Coenenchymal sclerites. E. 0,175 mm. F. 0,15 mm. G. 0,11 mm. H. 0,075 mm.

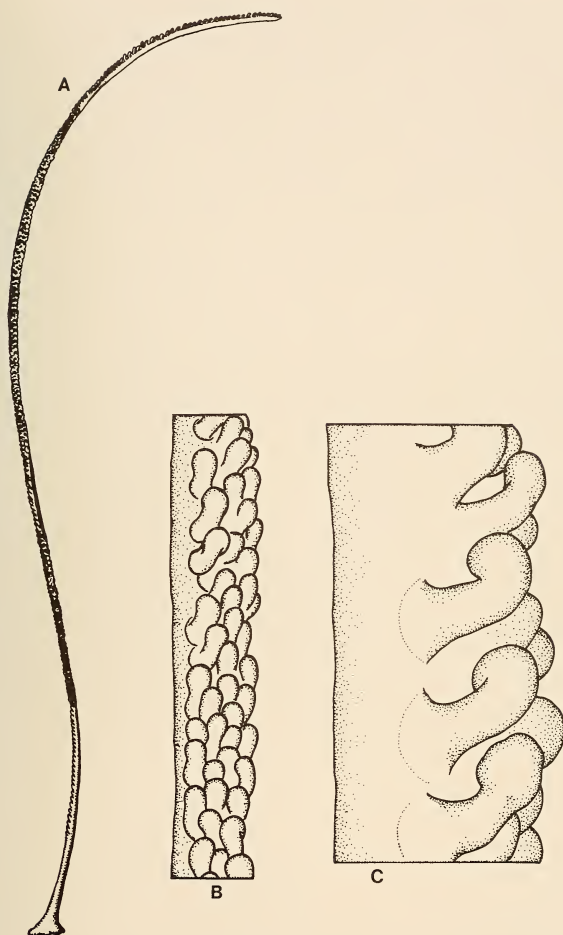


Fig. 53. *Simpsonella flagellata* (Simpson, 1910). A. An entire colony, 300 mm in length. B. Surface detail from middle of colony; total length of figure 16 mm. C. Surface detail from middle of colony; total length of figure 6 mm.

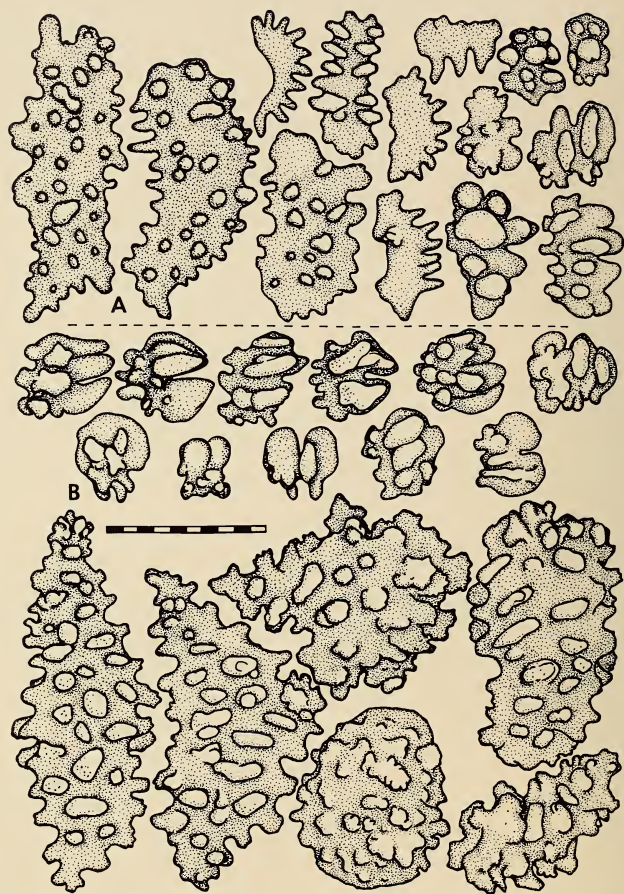


Fig. 54. *Simpsonella flagellata* (Simpson, 1910). A. Sclerites from the calyx wall. B. Coenenchymal sclerites. Scale bar = 0,1 mm.

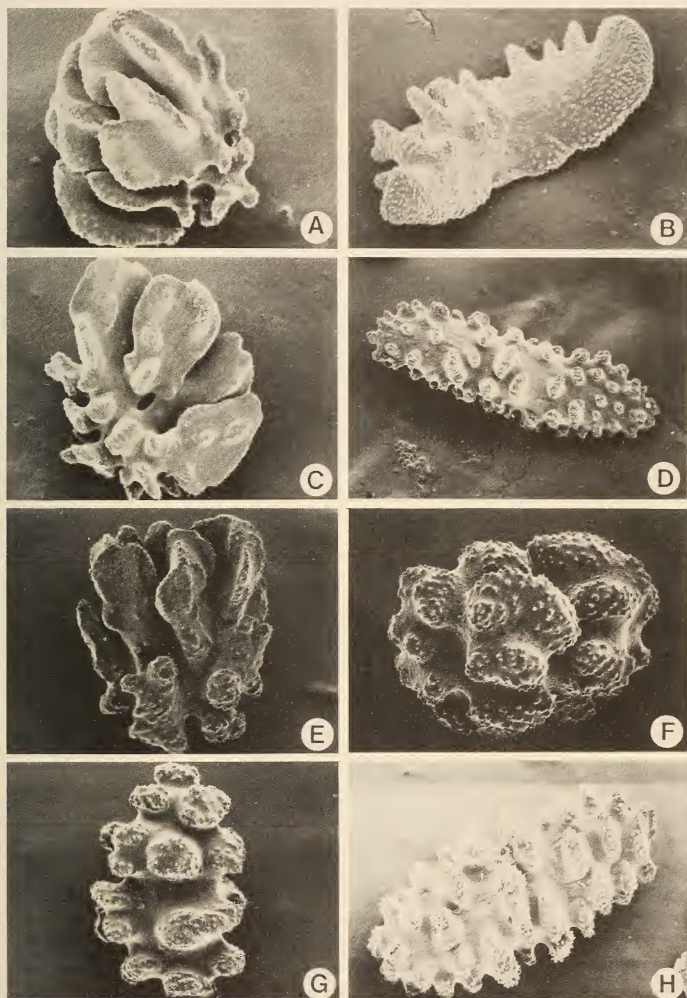


Fig. 55. Scanning electron micrographs. *Simpsonella flagellata* (Simpson, 1910); sclerites. A-D. Sclerites from the polyp walls. A. 0,08 mm. B. 0,11 mm. C. 0,08 mm. D. 0,21 mm. E-H. Coenenchymal sclerites. E. 0,062 mm. F. 0,055 mm. G. 0,075 mm. H. 0,15 mm.

SAM-H3930, off Nthlonyane River mouth, Transkei (32°17'S 29°06'E), 300 m, 5 July 1985, 7 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*.

Description

Colonies examined range in length from 60 mm to 500 mm. Colonies are flagelliform, unbranched, curved or ascending in a loose open spiral. Axis 0,5–2,0 mm wide. Coenenchyme very thin. Polyps crowded and multiserial, in a longitudinal band covering about one half of the circumference of the axis. A naked tract of coenenchyme is present on the opposite side. Polyps face upward and curve strongly inward, strongly clavate, mostly 2,0–2,5 mm long and 0,7–1,5 mm wide. Polypiferous tract present almost throughout entire length of colony, only the proximal-most 10–30 mm is polyp free. Holdfast discoid to deltoid, 5–10 mm in diameter. Width of polypiferous portion of colony usually 3–4 mm. Polyp sclerites (0,04–0,2 mm long) are irregularly-shaped, tuberculated plates with mostly scalloped margins; also present are some double discs or unilaterally foliate forms. Coenenchymal sclerites (0,1–0,25 mm long) are robust irregular spindles with large pustule-like tubercles; also present are many double discs and unilaterally foliate forms. Colony colour white to cream-white with bare tract greyish-white. Axis is graphite coloured with a lustrous sheen.

Distribution

Transkei coast, 125–300 m in depth. Type locality Cape Morgan (border of Cape Province and Transkei).

Remarks

This species is distinguished from other members of the genus by the possession of double discs and other unilaterally foliate sclerites (0,04–0,06 mm in length). (See remarks under *Simpsonella spiralis* (type species) regarding the generic designation adopted for this species.)

Simpsonella spiralis (Hickson, 1904)

Figs 56–58

Juncella spiralis Hickson, 1904: 231, pl. 8 (figs 6–9).

Juncella spiralis Stiasny, 1940: 31.

Hicksonella spiralis Simpson, 1910: 682, pl. 13 (figs 1, 3). Thomson, 1911: 889. Toeplitz, 1929: 241, 273. Hickson, 1938: 607.

Simpsonella spiralis Stiasny, 1940: 31. Williams, in press *b*.

Helicogorgia spiralis Bayer, 1981: 938.

Material

SAM-H1245 (syntype) of Cape Morgan, southern Transkei (32°45'45"S 28°26'15"E), 66 m, 12 January 1899, 4 partial colonies, dredge S.S. *Pieter Faure* survey, PF 858. SAM-H3931, off Mbashe River mouth, Transkei (32°21'S 29°00'E), 100 m, 5 July 1985, 10 colonies both partial and whole, dredge, G. C. Williams, R.V. *Meiring Naude*.

Description

Colonies examined range in length from 260 mm to 370 mm. The colonies are flagelliform and form relatively tight spirals, resembling curved corkscrews. Axis is 1,0–1,5 mm wide. Coenenchyme thin. Polyps are crowded and arranged multiserially in a longitudinal band covering approximately three-quarters of the circumference of the axis. A narrow naked tract of coenenchyme is present opposite the polyp band. Polyps 1,0–1,5 mm long and 0,3–0,5 mm wide, clavate, facing upward and slightly incurved. Polyp sclerites (0,10–0,17 mm long) are mostly broad and irregularly-shaped plates, with large rounded tubercles or fine punctation only. Coenenchymal sclerites are robust ovoid or elongate spindles with large pustule-like tubercles (0,07–0,28 mm long). Colour of polyps mostly cream-white; bare tract is orange-red; axis graphite coloured and glossy.

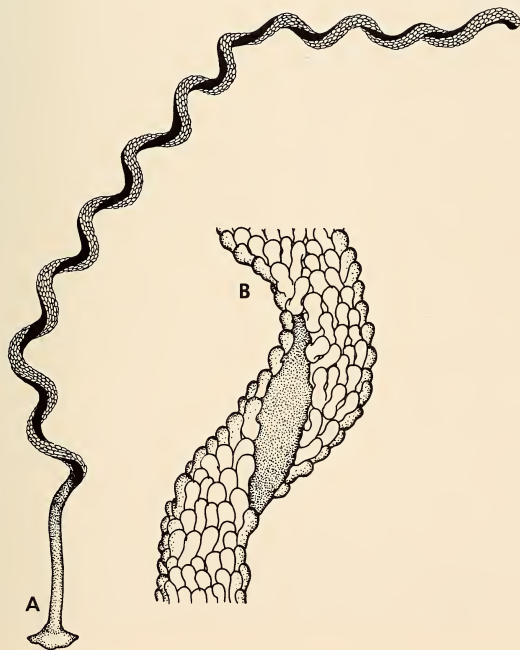


Fig. 56. *Simpsonella spiralis* (Hickson, 1904). A. An entire colony, 150 mm in length. B. Surface detail from middle of colony; total length of figure 11 mm.

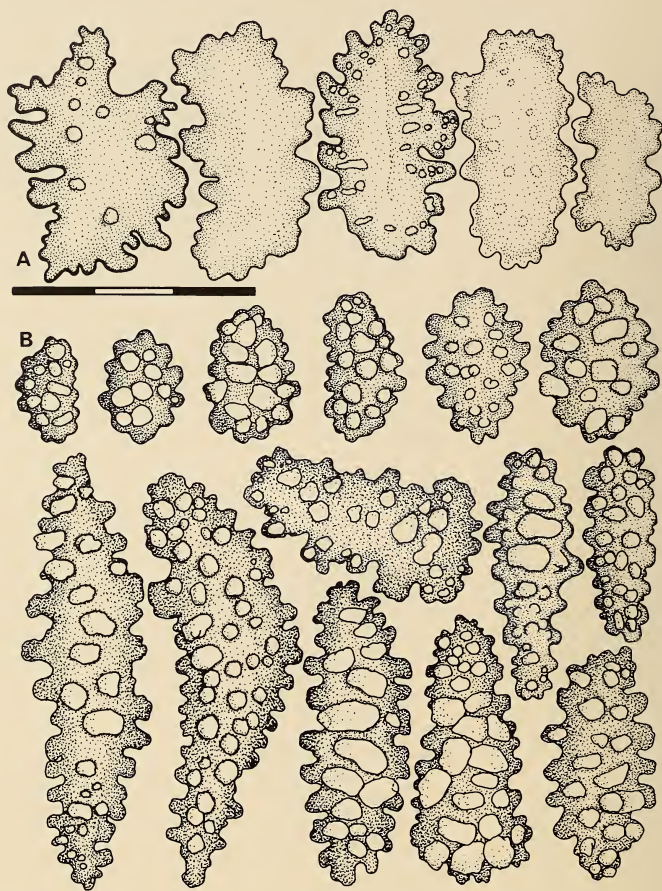


Fig. 57. *Simpsonella spiralis* (Hickson, 1904). A. Sclerites from calyx wall. B. Coenenchymal sclerites. Scale bar = 0,15 mm.

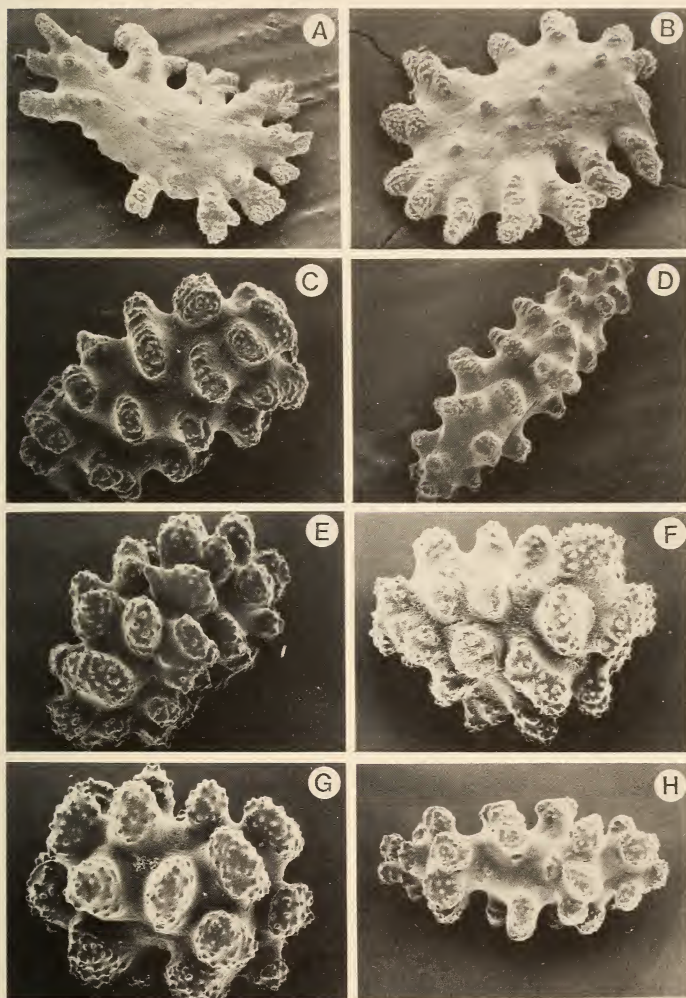


Fig. 58. Scanning electron micrographs. *Simpsonella spiralis* (Hickson, 1904); sclerites. A–D. Sclerites from the polyp wall. A. 0,13 mm. B. 0,09 mm. C. 0,085 mm. D. 0,14 mm. E–H. Coenenchymal sclerites. E. 0,09 mm. F. 0,075 mm. G. 0,07 mm. H. 0,125 mm.

Distribution

Southern Transkei coast, 66–100 m in depth. Type locality Cape Morgan (border of Cape Province and Transkei).

Remarks

Simpsonella spiralis is differentiated from other members of the genus by the tightly spiralled, corkscrew-like growth form and possession of broad ovoid to elongate spindles (0,07–0,28 mm long) in the coenenchyme.

Simpson (Dec. 1910: 682) considered Hickson's allocation of this species to *Junceella* (*Juncella* of Hickson is a misspelling) to be incorrect and proposed the generic name *Hicksonella*. Stiasny (1940: 31) found this name preoccupied by *Hicksonella* Nutting (May 1910), a genus in the family Gorgoniidae, and proposed the name *Simpsonella* instead. Bayer (1981: 938), having not seen Simpson's proposal, assigned the generic name *Helicogorgia* for the same. *Simpsonella* is therefore the valid and accepted generic designation.

Simpsonella squamifera (Kükenthal, 1919)

Figs 59–61

Radicipes squamiferus Kükenthal, 1919: 545, figs 240–243; 1924: 412.

Simpsonella squamifera Williams, in press *b*.

Material

SAM–H3886, off Port Edward, northern Transkei (31°05,8'S 30°18,8'E), 140 m, 8 July 1985, 2 whole and 3 partial colonies, dredge, coll. G. C. Williams, R.V. *Meiring Naude*. SAM–H3888, off Qolora River mouth, Transkei (32°45,8'S 28°36,4'E), 240–150 m, 14 July 1984, 2 whole colonies, dredge, coll. G. C. Williams, R.V. *Meiring Naude*. SAM–H3933, off Gonubie, eastern Cape Province (32°55,0'S 28°31,0'E), 630 m, 25 May 1978, 6 colonies, heavy dredge, South African Museum, R.V. *Meiring Naude*.

Description

Colonies examined range between 65 mm and 330 mm in length. Colonies are flagelliform, very thin, almost hair-like; upright, and are curved or form a loose open spiral. Axis 0,3–1,5 mm in diameter, arising from a disc-like holdfast, 4–5 mm in diameter. Polyps arranged uniserially along a sinuous longitudinal tract along the axis. Some colonies have polyps more crowded, appearing biserial in places. Polyps usually present in distal half of colony only, 0,6–0,8 mm long by 0,16–0,30 mm wide; short, robust, somewhat clavate, facing upward and incurved. Polyp sclerites are irregular plates with scalloped margins and tuberculated surfaces (0,10–0,22 mm long). Coenenchymal sclerites are elongated coarsely tuberculated spindles that may be bent or curved (0,12–0,33 mm long). Colony colour cream-white or reddish-orange.

Distribution

East London region to Durban, Natal, in depths 90–775 m (Williams in press *a*), and also Tanzania (type locality).

Remarks

This species was originally described by Kükenthal (1919: 545) from the region of Dar es Salaam and Zanzibar (Tanzania), 463 m in depth.

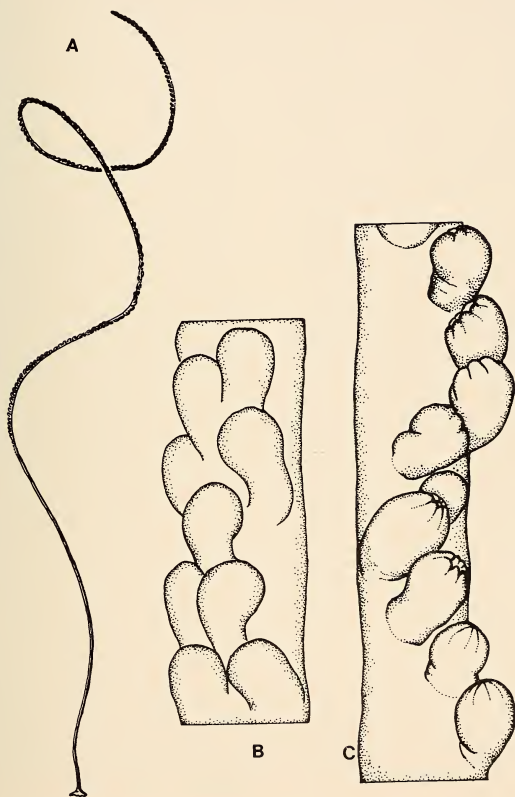


Fig. 59. *Simpsonella squamifera* (Kükenthal, 1919). A. An entire colony, 240 mm in length. B. Surface detail from the middle of one colony; total length of figure 3 mm. C. Surface detail from middle of another colony; total length of figure 4 mm.

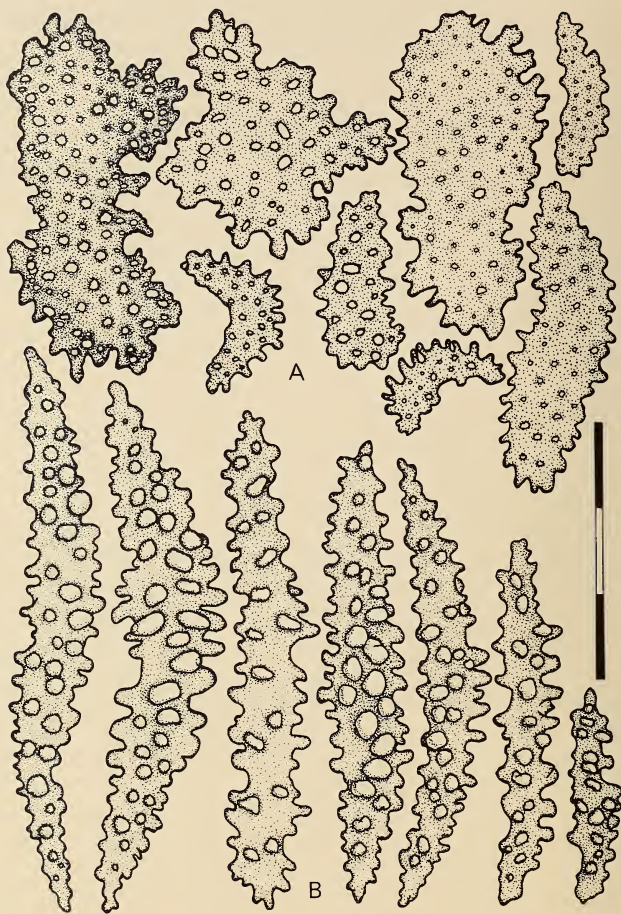


Fig. 60. *Simpsonella squamifera* (Kükenthal, 1919). A. Sclerites from calyx wall. B. Coenenchymal sclerites. Scale bar = 0,15 mm.

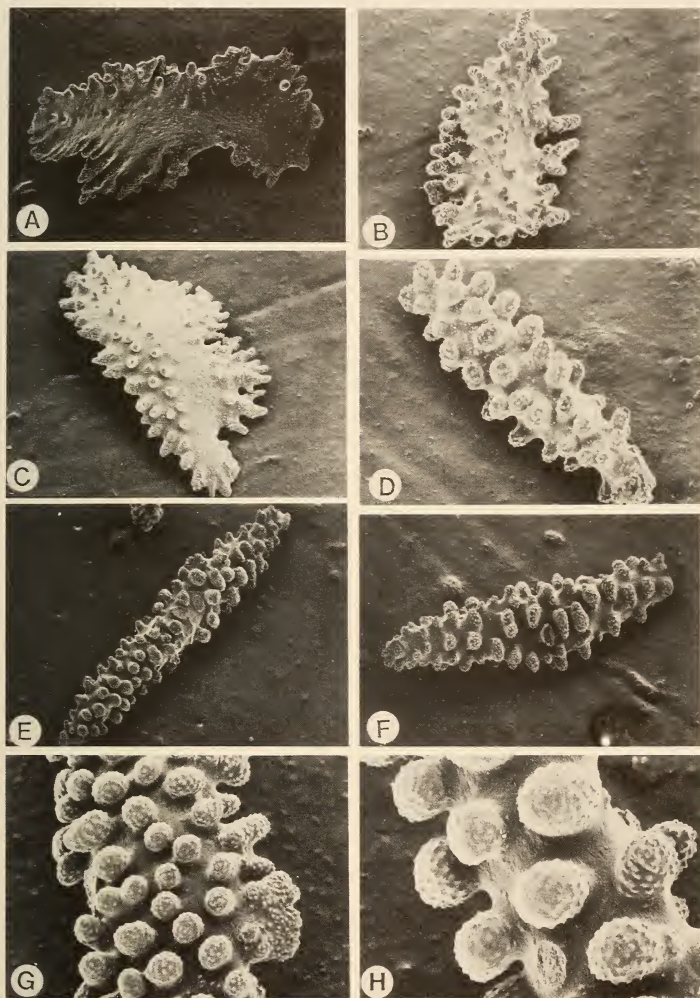


Fig. 61. Scanning electron micrographs. *Simpsonella squamifera* (Kükenthal, 1919); sclerites. A–C. Sclerites from the polyp wall. A. 0,22 mm. B. 0,12 mm. C. 0,175 mm. D–F. Coenenchymal sclerites. D. 0,10 mm. E. 0,35 mm. F. 0,20 mm. G. Detail of a polyp wall sclerite; length of portion shown 0,06 mm. H. Detail of a coenenchyme sclerite; length of portion shown 0,04 mm.

It is distinguished from other *Simpsonella* species by the uniserial or biserial arrangement of the polyps and the possession of large elongate coarsely tuberculate spindles in the coenenchyme (0,12–0,33 mm in length).

Kükenthal (1919: 545) allocated this species to the genus *Radicipes* Stearns, 1883. However, species of *Radicipes* are distinguished by polyp sclerites that are minutely sculptured rods or scales with smooth margins and without large tubercles, and root-like projections of the holdfast that are dichotomously branched. *Simpsonella squamifera*, on the other hand, possesses scalloped plates and coarsely tuberculated spindles, and small disc-like holdfasts; both these features are characteristic of the genus *Simpsonella*.

This species shows some variation regarding both colour and arrangement of polyps. Colony colour is usually cream-white but some may be at least partially rust-orange to reddish-brown. The longitudinal tract that contains the polyps forms a sinuous pattern along one side of the axis. The polyps may be sparsely arranged in a uniserial fashion along this tract or they may be more crowded with adjacent polyps in close proximity, appearing biserial in some places.

Genus *Trichogorgia* Hickson, 1904

Trichogorgia Hickson, 1904: 222.

Malacogorgia Hickson, 1904: 226.

Diagnosis

Colonies lyrate, flabellate, and planar, with secondary branching dichotomous. Length of terminal branches often one third to one half of the total colony length. Sclerites when present are ovoid scales.

A genus of four species from the western Atlantic, Caribbean Sea, and South Africa.

Type species. Trichogorgia flexilis Hickson, 1904; South Africa.

Trichogorgia flexilis Hickson, 1904

Figs 62, 71A–B

Trichogorgia Flexilis Hickson, 1904: 222, pl. 8 (fig 13), pl. 9 (figs 16–17).

Trichogorgia flexilis: Stiasny, 1940: 36, text-fig. I.

Material

SAM–H581 (syntype), off Cape Recife (34°07'S 25°43'E), 102 m, 1 dried colony. SAM–H1047, off Cape Vidal (28°10'S 32°45'E), 146–183 m, 27 February 1901, dredge, 2 colonies, S.S. *Pieter Faure* survey, PF 11967. SAM–H3704, off East London (33°10,3'S 20°06,2'E), 100 m, 17 July 1984, 2 colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM–H3935, Mbashe River mouth, Transkei (32°20,0'S 29°00,9'E), 110 m, 5 July 1985, 1 colony, dredge, G. C. Williams, R.V. *Meiring Naude*.

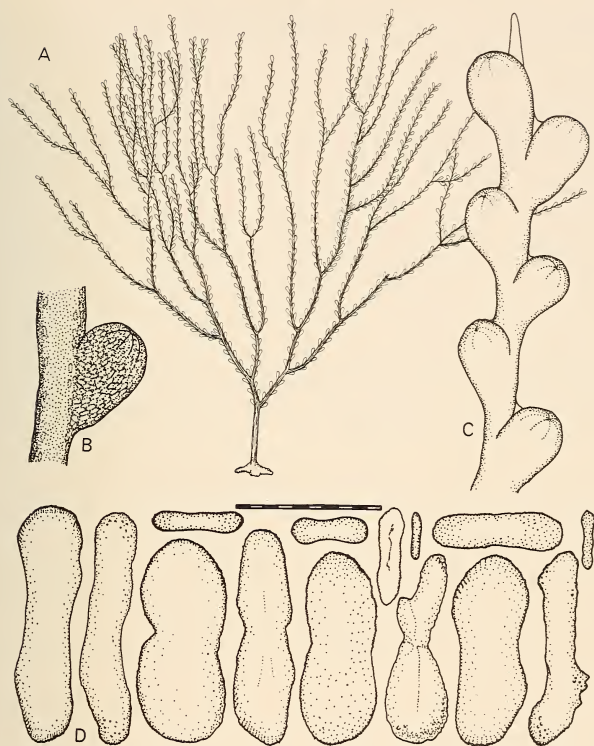


Fig. 62. *Trichogorgia flexilis* Hickson, 1904. A. An entire colony, 90 mm in height. B. A single polyp 0,7 mm in length. C. Detail of a terminal branch 3,5 mm long. D. Polyp sclerites. Scale bar = 0,1 mm.

Description

The colonies examined range in length from 70 mm to 90 mm. Colonies are planar, branching is dichotomous, relatively sparse from a single basal stem. Polyps are densely arranged in two rows along each branch and are placed opposite or alternate to one another. The contracted polyps are relatively robust and somewhat clavate, and rarely exceed 1 mm in length. Sclerites of the coenenchyme and surface of the polyps are scales that vary in length from 0,04 mm to 0,17 mm. Many are somewhat bone-shaped with very fine

denticulations along the margin. Colony colour greyish-white, or light yellowish-brown.

Distribution

Cape Recife near Port Elizabeth to Cape Vidal, northern Natal, 24–183 m in depth (Williams in press a). Type locality is Cape Recife (south coast of South Africa).

Remarks

Trichogorgia capensis (Hickson, 1904: 226) (= *Malacogorgia capensis*), was described from near the type locality of *T. flexilis* at Algoa Bay (36 m depth). Its distribution extends from False Bay to Algoa Bay (Utinomi 1964: 11). I have examined Hickson's holotype (SAM-H651), which is dried and damaged. It appears identical to *T. flexilis*, except that it completely lacks sclerites. Thus, two species of *Trichogorgia* are known to occur in southern Africa, *T. flexilis* with sclerites, and *T. capensis* without sclerites. Utinomi (1964: 9) recorded *T. capensis* as *Malacogorgia capensis* from Antarctica (Gunnerus Bank and Cape Cook at 500–590 m in depth).

Genus *Xenogorgia* Bayer & Muzik, 1976

Xenogorgia Bayer & Muzik, 1976: 85.

Diagnosis

Colonies bottlebrush-like in appearance with lateral branches arising irregularly from the main axis. The polyps are cylindrical and are situated on all sides of the branches. Sclerites are thin, mostly oval scales.

One species of the genus is presently known (from the west coast of South Africa in deep water).

Type species. *Xenogorgia sciurus* Bayer & Muzik, 1976; west coast of South Africa.

Remarks

Xenogorgia sciurus was described from off Lambert's Bay on the west coast of South Africa (680–800 m in depth). The species has apparently not been encountered since the type material was originally collected. See Bayer & Muzik (1976: 85–89, figs 8–10) for a detailed description of the type material.

Family *Primnoidae* Gray, 1857

Axis entirely calcified, often longitudinally grooved on surface. Polyps monomorphic, armed with large plates or scales. Retracted anthocodiae protected by an operculum composed of eight deltoid scales. Branches covered by a layer of scales or plates.

Twenty-four genera of cosmopolitan distribution.

Genus *Callogorgia* Gray, 1858

Callogorgia Gray, 1858: 286. Bayer, 1982: 119 (Lit!).

Xiphocella Gray, 1870: 56.

Caligorgia: Wright & Studer, 1889: 75. Kükenthal, 1919: 362; 1924: 267.

Diagnosis

Colonies with planar and pinnate branching, branchlets mostly alternate, only rarely opposite. Polyps face upward, in whorls of 3–6. Each polyp is curved inward toward the axis. Polyp sclerites are curved scales. Coenenchymal sclerites are ovate, polygonal or elongate plates.

Approximately 20 species of the Atlantic, Mediterranean, and Indo-Pacific.

Type species. *Gorgonia verticillata* Pallas, 1766; eastern Atlantic and Mediterranean Sea.

Remarks

Several colonies of a presently undetermined species of *Callogorgia* have recently been collected from the southern Transkei (Indian Ocean coast of southern Africa) between 200 m and 250 m in depth.

The present work represents a new record of the genus *Callogorgia* to southern Africa.

Bayer (1982: 116) distinguished two other genera that are similar to *Callogorgia*. These are *Fanellia* Gray, 1870 (eight species from the Pacific Ocean; see Bayer & Stefani 1988: 471 for a key to the species of *Fanellia*), and *Ascolepis* Thomson & Renner, 1931, with perhaps four species in the Southern oceans.

Genus *Calyptrophora* Gray, 1866

Calyptrophora Gray, 1866: 25. Wright & Studer, 1889: 50. Kükenthal, 1919: 468; 1924: 317 (Lit!). Bayer, 1956: F221.

Diagnosis

Colonies with branching that is mostly planar and loosely dichotomous, although sometimes unilaterally pinnate and fan-shaped. Polyps are in whorls and face upward. Each polyp is surrounded by a ring composed of the fusion of two pairs of body scales.

A genus of approximately six species of the Indo-Pacific and Atlantic oceans, in deep water.

Type species. *Calyptrophora japonica* Gray, 1866, Japan.

Remarks

Material representing a unidentified species *Calyptrophora* has recently been collected from northern Natal (Indian Ocean coast of southern Africa) between 722 m and 1 200 m in depth.

The present work represents a new record for the genus *Calyptrophora* to southern Africa.

Genus *Narella* Gray, 1870

Narella Gray, 1870: 49.

Calypterinus Wright & Studer, 1889: 53.

Stachyodes Wright & Studer, 1889: 54.

Diagnosis

Colonies planar, branching often lyrate, pinnate, or dichotomous. Polyps face downwards and are arranged in whorls. Each polyp is conspicuously armed with 3–4 pairs of large abaxial body scales. Perhaps 20 species of the Atlantic, Indo-Pacific, and Antarctic.

Type species. *Primnoa regularis* Duchassaing & Michelotti, 1860; West Indies.

Narella gilchristi (Thomson, 1911) comb. nov.

Figs 1G, 63–65

Stachyodes gilchristi Thomson, 1911: 885, pl. 44 (fig. 1), pl. 45 (figs 2a, 2b). Stiasny, 1940: 34, text-fig. H, pl. 1 (fig. 8).

Stachyodes gilberti (?misspelling of *S. gilchristi*) Kükenthal, 1919: 468; 1924: 316.

Stachyodes capensis Thomson, 1917: 25, text-fig. 5, pl. 3.

Material

SAM-H985 (holotype), off Cape Vidal, northern Natal (28°10'S 32°40'E), 146–183 m, 27 February 1901, 1 fragmented colony, dredge, S.S. *Pieter Faure* survey, PF 11966. SAM-H3657, Park Rynie, Natal (30°20,7'S 20°51,6'E), 105 m, 10 July 1984, 3 whole colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM-H1108 (holotype of *Stachyodes capensis*), off Cape Morgan (border Cape Province and Transkei), 141 m, 26 July 1901, 1 dried and fragmented colony, dredge, S.S. *Pieter Faure* survey, PF 13159. SAM-H3656, off Ngabara Point, Transkei (32°25,0'S 28°58,3'E), 330–340 m, 13 July 1984, 2 partial colonies, dredge, G. C. Williams, R.V. *Meiring Naude*. SAM-H3660, off East London (33°10,3'S 28°06,2'E), 100 m, 17 July 1984, 1 whole colony, dredge, G. C. Williams, R.V. *Meiring Naude*.

Description

The colonies examined are 90–140 mm in height and 70–150 mm in width. Branching is lyrate (branching in which the secondary branches are straight, upright, and parallel) and planar. Colonies may have as many as 20 upright and parallel secondary branches. Some of these may be dichotomously branched. Polyps appear in whorls of 4–8 polyps per whorl. Whorls are congested along all branches, and vary from 4 mm to 9 mm in diameter. Polyps 2–3 mm in height and 1,0–1,5 mm in width, composed of 3 (rarely 4) pairs of abaxial scales. Basal and medial scales rounded, pointed, or somewhat serrated terminally. Buccal scales usually rounded, more-or-less smooth terminally. Coenenchyme of branches covered with a layer of scales, exhibiting a cobblestone-like appear-

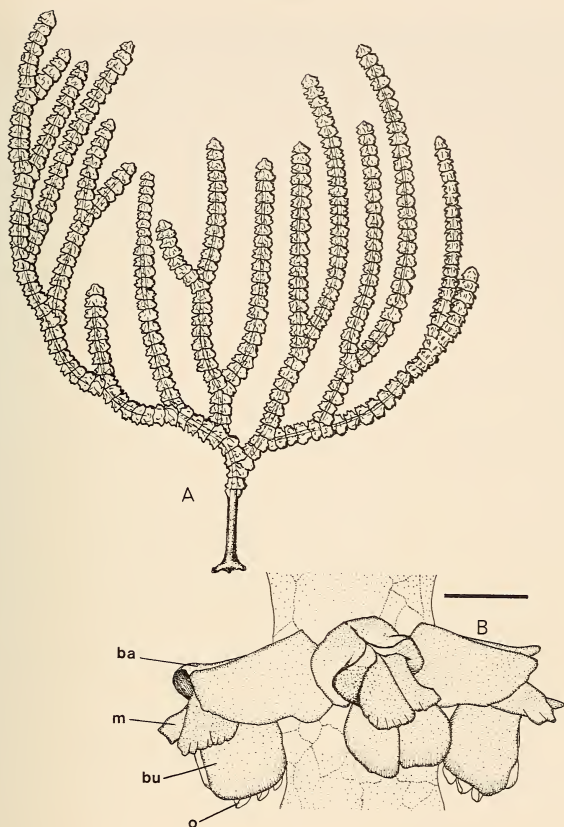


Fig. 63. *Narella gilchristi* (Thomson, 1911). A. An entire colony, 150 mm in height. B. Detail of a group of three polyps; scale bar = 1.0 mm. Abbreviations: ba—basal scale, bu—buccal scale, m—medial scale, o—opercular scale.

ance. Colony scales 0.65–2.0 mm in length. Colony colour pink in life, fading to white in alcohol.

Distribution

East London to Cape Vidal, northern Natal, 90–340 m in depth (Williams in press *a*). Type locality is Cape Vidal.

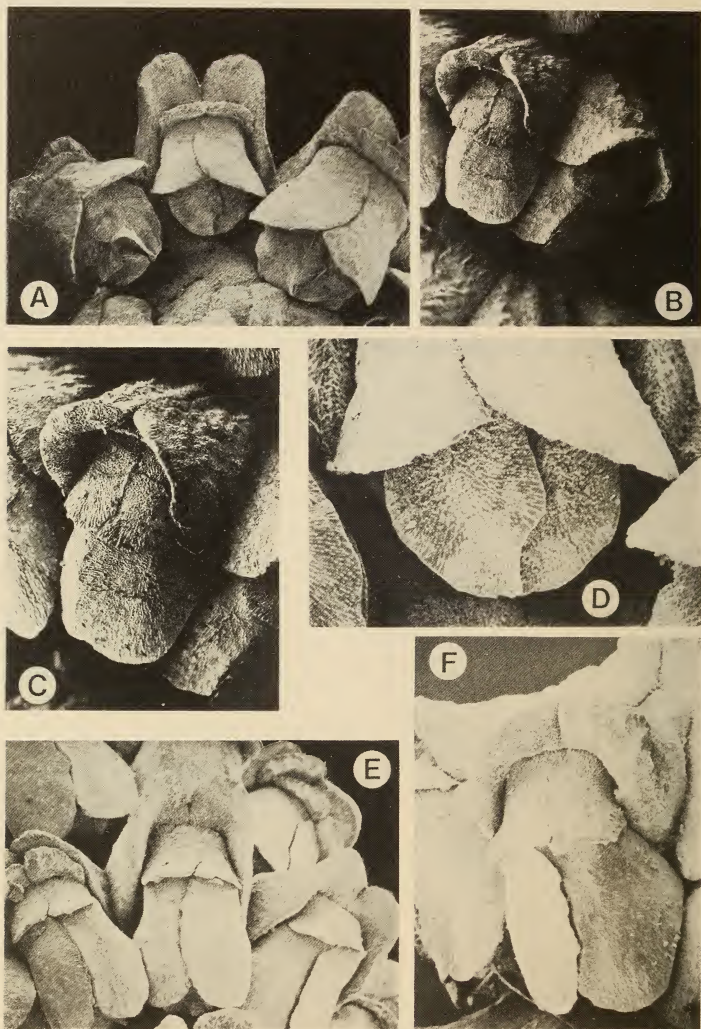


Fig. 64. Scanning electron micrographs. *Narella gilchristi* (Thomson, 1911); polyps. A. Group of three polyps showing basal, buccal, medial, and opercular scales; total length of micrograph 4,0 mm. B. Two polyps showing basal, medial, and buccal scales; length of polyps 1,9 mm. C. A single polyp enlarged from B, 1,9 mm in length. D. Detail of a polyp showing buccal and opercular scales; total length of micrograph 1,2 mm. E. A whorl of polyps; polyp on left has two pairs of medial scales; total length of micrograph 3,6 mm. F. A single polyp, 2,4 mm long.

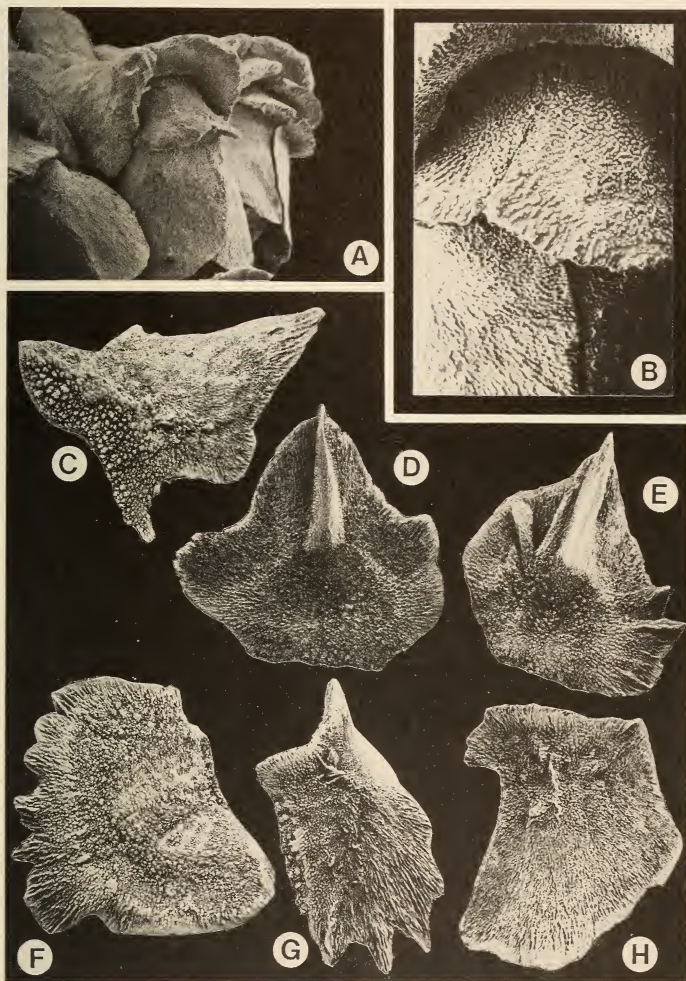


Fig. 65. Scanning electron micrographs. *Narella gilchristi* (Thomson, 1911). A. Group of three polyps, each 1.2 mm in length. B. Detail of polyp showing terminal margins of medial scales. C-H. Scales from polyps and surface of colony. C. 1.25 mm. D. 0.8 mm. E. 0.95 mm. F. 1.1 mm. G. 1.2 mm. H. 1.2 mm.

Remarks

Bayer (1956: 222) considered *Stachyodes* Studer, 1887, a synonym of *Narella* Gray, 1870. I have compared the holotypes of *Narella gilchristi* and *Stachyodes capensis* Thomson, 1917 and can find no substantial differences to justify maintaining them as two species. Variability is evident in the ornamentation of the terminal margin of the polyp body scales. Some polyps have rounded scales with margins lacking spines; others have prominent deltoid serrations or spines. The more rounded terminal margins of the polyp scales in *S. capensis* can certainly be explained by intraspecific variation. I therefore consider *S. capensis* a junior synonym of *N. gilchristi*.

Genus Primnoeides Wright & Studer, 1889

Primnoeides Wright & Studer, 1889: 90.

Diagnosis

Colonies are feather-like with planar and pinnate branching. The lateral branches are arranged in pairs, originating opposite one another. The polyps face upwards and are arranged in pairs along the lateral branches. Sclerites of the polyps and coenenchyme are thin and flat scales.

Perhaps two species known from the south-western Indian Ocean and adjacent Subantarctic.

Type species. *Primnoeides sertularoides* Wright & Studer, 1889; Subantarctic.

Remarks

Several colonies representing a currently unidentified species of the genus *Primnoeides* have recently been collected from the east coast of southern Africa (southern Transkei to northern Natal), 400–450 m in depth.

The present work represents a new record for the genus *Primnoeides* to southern Africa.

Genus Primnoella Gray, 1858

Primnoella Gray, 1858: 286. Kükenthal, 1919: 384; 1924: 279 (Lit!). Bayer, 1956: F220.

Diagnosis

Colonies mostly unbranched and whip-like or rarely sparsely dichotomously branched. Polyps are in whorls and are closely appressed to the axis. The polyps face upwards. The opercular scales are inconspicuous and the more conspicuous marginal scales often fold over them.

Approximately fifteen species of the Southern Hemisphere: Southern Ocean, Atlantic, and Indo-Pacific.

Type species. *Primnoa australasiae* Gray, 1849; Australia, Tasmania, and New Zealand.

Remarks

Material representing a presently unidentified species of the genus *Primnoella* has recently been collected from the east coast of southern Africa off the southern Transkei, 710–775 m in depth.

The present work represents a new record of the genus *Primnoella* for southern Africa.

Genus *Thouarella* Gray, 1870

Thouarella Gray, 1870: 45. Kükenthal, 1919: 405; 1924: 287 (Lit!). Bayer, 1956: F220.

Amphilaphis Wright & Studer, 1889: 70.

Euthouarella Kükenthal, 1915: 149.

Diagnosis

Colonies often resemble bottlebrushes. Branching pinnate and multiplanar, mostly profuse. Branches short, and arise from a single main stem. Large scales present on all sides of a polyp. Eight marginal scales in two rings of four that alternate below the opercular scales. Marginal scales fold inward over the smaller opercular scales. A genus of approximately thirty species inhabiting the Subantarctic, southern Atlantic and southern Indo-Pacific.

Type species. Primnoa antarctica Valenciennes, 1846; Southern oceans.

Thouarella hicksoni Thomson, 1911

Figs 1H, 66–68

Thouarella hicksoni Thomson, 1911: 886, pl. 44 (figs 3a, 3b), pl. 45 (fig. 1). Kükenthal, 1919: 439; 1924: 301. Stiasny, 1940: 32, text-fig. G, pl. 4 (fig. 21).

Thouarella Hicksoni: Tixier-Durivault, 1954: 625.

Material

SAM-H1276, off Lion's Head, Cape of Good Hope Peninsula (33°57'S 18°10'E), 110 m, 22 March 1900, shrimp trawl, 3 colonies, S.S. *Pieter Faure* survey, PF 2256. SAM-H3636, off Stony Point, Transkei (32°30,9'S 28°45,0'E), 360 m, 12 July 1984, many colonies, dredge, G. C. Williams, R.V. *Meiring Naude*.

Description

Colonies examined range in length from 70 mm to 230 mm. Branching is in a bottlebrush pattern, pinnate, multiplanar. Branches arise approximately perpendicular to main stem. Branching profuse along a single main stem. Some secondary branches may also be branched. Polyps are crowded on branches, arranged on all sides of a branch but not in whorls. Polyps are 1,0–1,5 mm in length. The eight marginal scales that subtend the opercular scales are broad and somewhat circular with a deltoid and blunt terminal spine, which may be somewhat serrated laterally. Other polyp scales are deltoid to somewhat circular

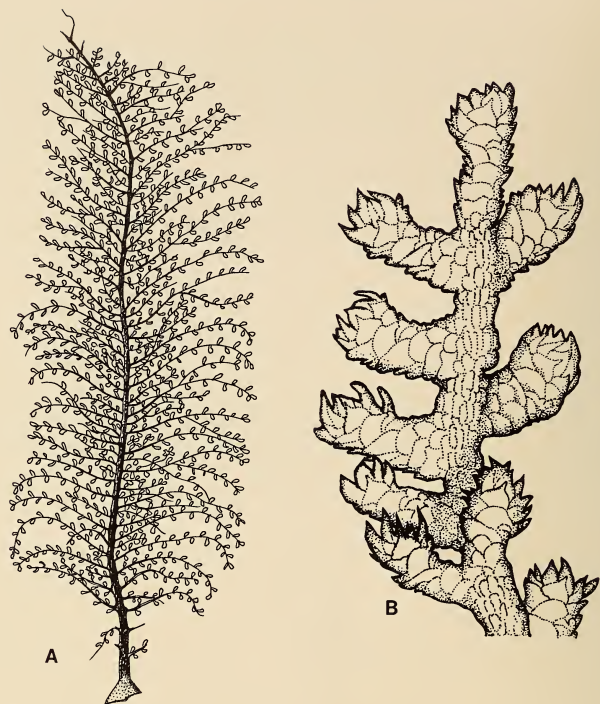


Fig. 66. *Thouarella hicksoni* Thomson, 1911. A. An entire colony, 160 mm in height. B. Detail of a terminal branch showing ten polyps; total length of figure 6 mm.

in shape, and with coarse tuberculation proximally. Coenenchymal scales are thin and irregularly ovoid. Colony colour pale yellowish to cream-white.

Distribution

Namaqualand coast (South African west coast) to the coast of the Transkei, 100–860 m in depth (Williams in press *a*). Type locality is Cape St Francis (Cape south coast).

Family *Isididae* Lamouroux, 1812

Axis composed of nodes of horn and internodes of non-spicular calcium carbonate. Holdfasts are root-like for soft substrata or disc-like for hard

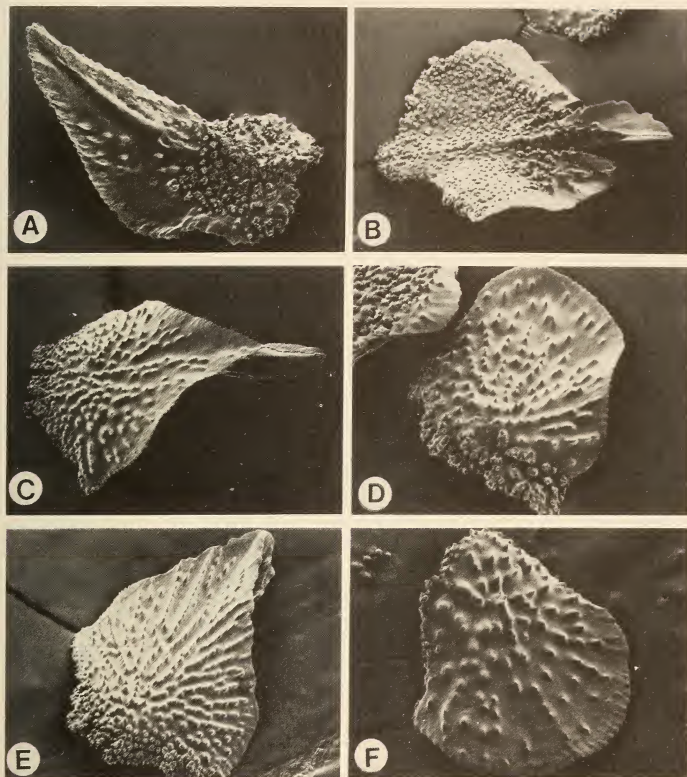


Fig. 67. Scanning electron micrographs. *Thouarella hicksoni* Thomson, 1911; polyp body scales. A. 0,25 mm. B. 0,40 mm. C. 0,43 mm. D. 0,24 mm. E. 0,45 mm. F. 0,20 mm.

substrata. Branching arises from nodes or internodes. Polyps monomorphic. Sclerites of spindles, needles, rods, plates or scales.

Twenty genera in six subfamilies, cosmopolitan distribution.

Subfamily Keratoisidinae Gray, 1870

Polyps non-retractile. Sclerites of the polyps include needles, rods or spindles.

At least four genera.

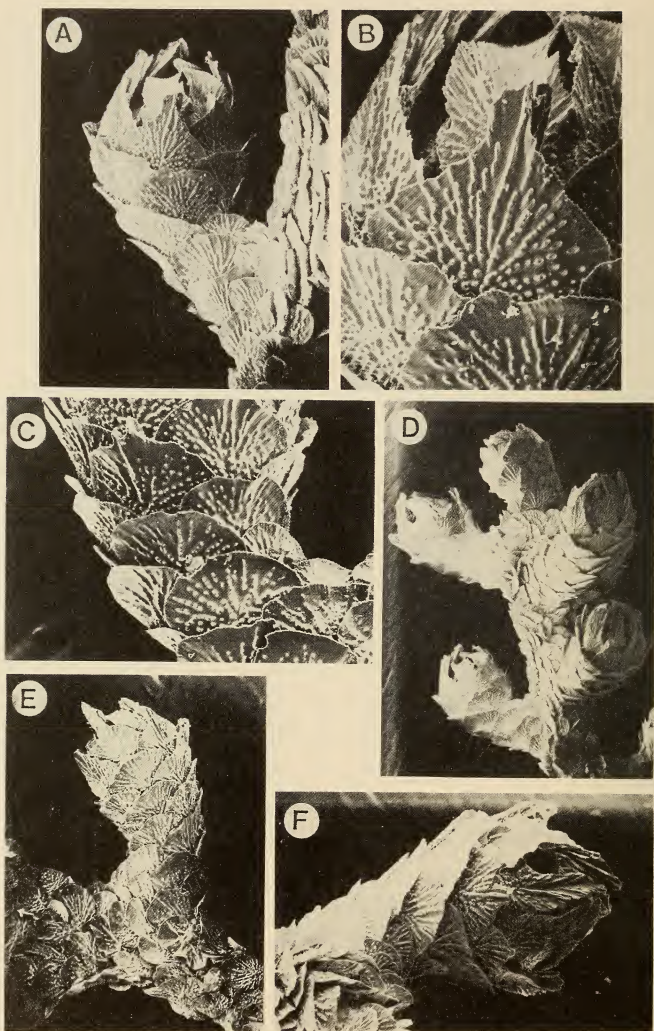


Fig. 68. Scanning electron micrographs. *Thouarella hicksoni* Thomson, 1911. A. A single polyp, 1.3 mm in length. B. Detail of polyp in A, total length of micrograph 0.56 mm. C. Middle portion of a single polyp, maximum linear dimension of micrograph 0.9 mm. D. Terminal branch showing five polyps, 1.2 mm in length. E. A single polyp, 1.2 mm long. F. A single polyp, 1.2 mm long.

Genus *Keratoisis* Wright, 1869

Keratoisis Wright, 1869: 23. Bayer, 1956: F222.

Ceratoisis: Verrill, 1883: 20 (unjustified emendation). Wright & Studer, 1889: 26. Kükenthal, 1919: 585; 1924: 423 (Lit!).

Diagnosis

Colonies with branches arising from the internodes. Colonies large and robust. Polyps with longitudinally placed sclerites not arranged *en chevron*. Terminal ends of polyps with spine-like projections of spindles or needles between the tentacular bases.

A genus of perhaps twenty or more species of circumtropical distribution in deep water.

Type species. Keratoisis grayi Wright, 1869; north-eastern Atlantic.

Remarks

An undetermined species of the genus *Keratoisis* occurs off the Natal coast, 600–810 m in depth. This represents a new record for the genus *Keratoisis* in southern Africa.

Genus *Acanella* Gray, 1870

Acanella Gray, 1870: 16. Nutting, 1910: 14. Kükenthal, 1919: 573; 1924: 418 (Lit!). Bayer, 1956: F222.

Diagnosis

Colonies with branches arising from the nodes. Colonies are bushy, with the branches often arising in whorls. Spicules of the polyps are mainly spindles and some flattened rods, with surfaces often finely denticulated.

A genus of ten or more species from the Atlantic and Indo-Pacific oceans.

Type species. Mopsea arbusculum Johnson, 1862; North Atlantic.

Remarks

An undetermined species of the genus *Acanella* is known from the Natal coast, 549–1 200 m in depth. Thomson (1917: 19) identified this *Acanella* species as *A. eburnea* (Pourtales, 1860), originally described from the northern Atlantic. I consider this a dubious identification.

The present work represents a new record for the genus *Acanella* to southern Africa.

Subfamily Mopseinae Gray, 1870

Polyps non-retractile, with an operculum. Sclerites of the polyps are exclusively scales.

At least three genera.

Genus *Chathamisis* Grant, 1976

Chathamisis Grant, 1976: 9, 10, 43. Bayer, 1981: 941.

Diagnosis

Colonies with branches arising from the internodes. Branching is bushy or bottlebrush-like, multiplanar. Sclerites are scales with scalloped or serrated margins and varying amounts of tuberculation.

A genus of at least nine species from the Southern oceans.

Type species. *Chathamisis bayeri* Grant, 1976; New Zealand.

Chathamisis ramosa (Hickson, 1904)

Figs 69–70, 71C–F

Ceratoisis ramosa Hickson, 1904: 224, pl. 7 (figs 3–4), pl. 8 (fig. 12). Thomson, 1911: 877, pl. 43 (fig. 1). Stiasny, 1940: 35.

Primoisis ramosa Kükenthal, 1919: 616; 1924: 436.

Chathamisis ramosa Bayer & Stefani, 1987: 966.

Material

SAM-H1054, off East London (33°10'S 27°50'E), 357 m, 23 April 1901, 1 colony, shrimp trawl, S.S. *Pieter Faure* survey, PF 12826. SAM-H3665, off Stony Point, Transkei (32°39'S 20°45'E), 360 m, 12 July 1984, 2 colonies, G. C. Williams, R.V. *Meiring Naude*.

Description

Colonies range in length from 60 mm to 95 mm. Colonies are attached to hard substrata with disc-like holdfasts. Colonies somewhat flabellate. Main stem short (<10 mm long). Branching is bushy and multiplanar, but the colonies are somewhat laterally compressed in one plane. Polyps scattered and present on all sides of branches, usually arising perpendicular to axes of branches. Polyps are 1.0–1.2 mm long and 0.5 mm wide, clavate. Anthocodiae retractile into body of polyp. Nodes are metallic gold or bronze in colour (0.3–1.5 mm in length). Internodes white (3–7 mm in length). Polyp sclerites are irregular plates with serrated or scalloped margins and some surface tuberculation (0.17–0.30 mm long). Coenenchymal sclerites are similar but mostly narrow (0.08–0.30 mm in length), some smaller ones being crescent shaped. Colony colour cream-white, pale-yellowish, or pale-pinkish.

Distribution

Off the Cape of Good Hope Peninsula to northern Natal, 146–900 m in depth (Williams in press a). Type locality is off Cape Point (south-western Cape Province).

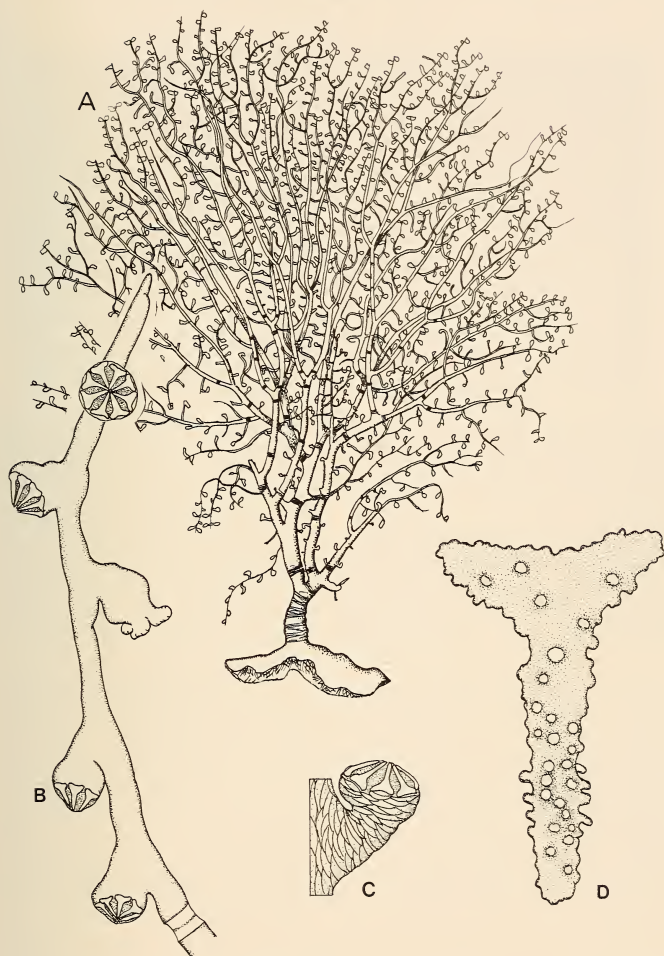


Fig. 69. *Chathamisis ramosa* (Hickson, 1904). A. An entire colony, 70 mm in length. B. Detail of the distal end of a branch showing six polyps and opercular sclerites; length of figure 5,1 mm. C. A single polyp showing placement of sclerites; total height of polyp 0,6 mm. D. A single opercular sclerite 0,2 mm in length.

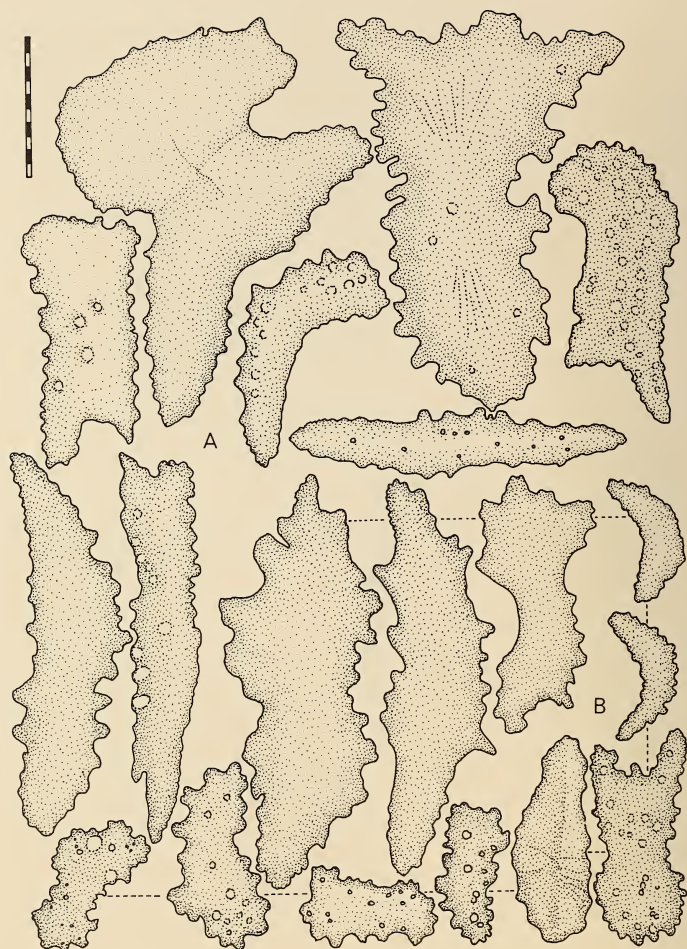


Fig. 70. *Chathamisis ramosa* (Hickson, 1904). A. Sclerites from the calyx wall. B. Coenenchymal sclerites. Scale bar = 0,1 mm.

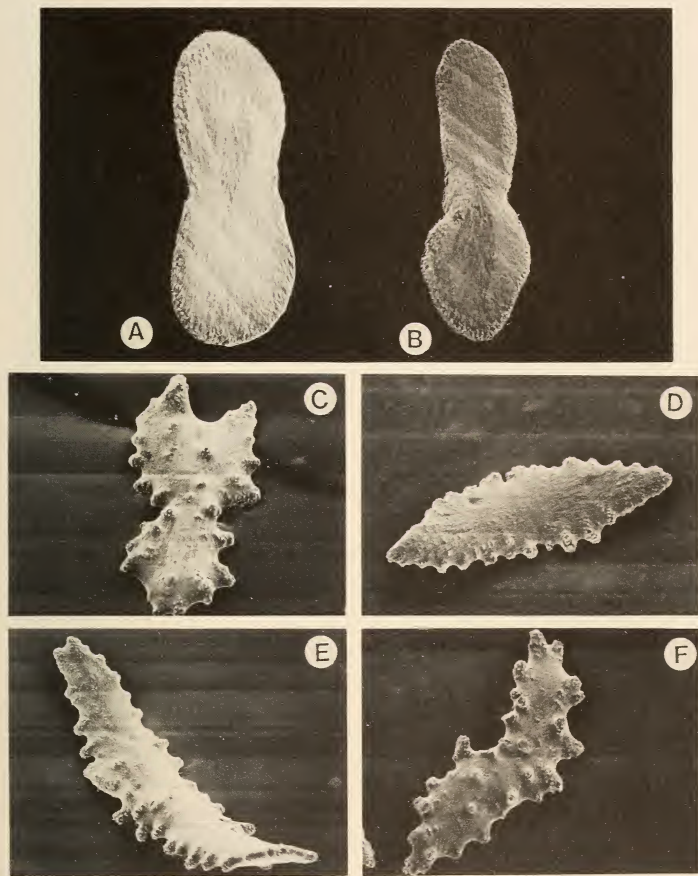


Fig. 71. Scanning electron micrographs. A-B. *Trichogorgia flexilis* Hickson, 1904, sclerites from the polyp wall. A. 0,1 mm. B. 0,114 mm. C-F. *Chathamisis ramosa* (Hickson, 1904); sclerites from the polyp wall and surface coenenchyme. C. 0,12 mm. D. 0,145 mm. E. 0,21 mm. F. 0,19 mm.

Remarks

This species is differentiated from other southern African isidids by the possession of disc-like holdfasts for attachment to hard substrata, profuse branching with branches arising from internodes, and transversely arranged scale-like or plate-like sclerites surrounding the polyps.

Morphological variability is evident in this species. Some colonies have a bushy growth form and are multiplanar, others appear planar with dichotomous branching but none-the-less possess short branches perpendicular to the plane of the colony. In many of these near-planar colonies, the polyps are mainly restricted to one face of the colonial plane. Sclerite ornamentation also varies. Some colonies have scales that are relatively smooth with only a few scattered tubercles. Others possess strongly tuberculated scales.

KEY TO THE GORGONIAN OCTOCORALS OF SOUTHERN AFRICA

- 1A. Axis absent, colony composed of one or two outer layers (cortex) and an inner layer (medulla). Cortex and medulla separated by a ring of longitudinal canals. Medulla composed entirely of free but densely-set sclerites 2
- 1B. Axis present, composed of fused sclerites united by horn-like material and/or calcium carbonate, or entirely proteinous and permeated by varying amounts of non-spicular calcium carbonate, or totally calcified without sclerites or horn 4
- 2A. Colonies unbranched; almost digitiform or clavate to capitate (swollen or widening distally), <50 mm in length (Fig. 7) *Diodogorgia capensis*
- 2B. Colonies elongate and tapering distally; usually branched; mature colonies >50 mm in length (Figs 1, 5) 3
- 3A. Colonies uniform brownish-tan or whitish. Calyces permanent and conspicuous, with eight external longitudinal grooves. Anthocodiae commonly preserved exerted (Fig. 2) *Anthothela parviflora*
- 3B. Colonies wine-red, orange with yellow calyces, or uniform pinkish-white or yellow. Calyces present or absent, without eight external longitudinal grooves. Anthocodiae commonly preserved totally retracted into calyces or colony (Fig. 5) *Homophyton verrucosum*
- 4A. Axis composed of sclerites that are united together by horn-like material or non-spicular calcium carbonate or both (Figs 10–11)
..... family *Melithaeidae* (incl. *Acabaria rubra*)
- 4B. Axis composed of proteinous material, which to varying degrees is permeated by non-spicular calcium carbonate, or axis composed purely of non-spicular calcium carbonate without any proteinous material 5
- 5A. Axis continuous and uniform; with a central core that is hollow and cross-chambered. Central core may be very narrow and inconspicuous in some forms 6

- 5B. Axis solid throughout (in forms with a continuous and uniform axis). If axis jointed, then internodes with hollow central core 21
- 6A. Chambered core of axis surrounded by smooth sclerites bound together by sheaths of horn-like material. Sclerites of coenenchyme primarily compact triradiate (Figs 14–16) *Ideogorgia capensis*
- 6B. Chambered core of axis surrounded by horn-like layers that may contain non-spicular calcium carbonate. Sclerites not primarily triradiates 7
- 7A. Calyces permanent; with spindles, needles or crown spines arranged into eight *en chevron* points 8
- 7B. Calyces without eight *en chevron* points; or entire polyp retractile into coenenchyme of colony 9
- 8A. Calyces tall and cylindrical (3–4 mm long, 1,5 mm wide), with distal thorny crown composed of projecting crown spines . . . *Acanthogorgia* spp.
- 8B. Calyces short and conical (approximately 1 mm long), without distal thorny crown of projecting crown spines *Anthogorgia* sp.
- 9A. Coenenchyme contains many sclerites that are balloon clubs (*Eunicella* spp.) 10
- 9B. Coenenchyme without balloon clubs 12
- 10A. Balloon clubs composed of three crowns (Figs 29–30) *Eunicella tricornata*
- 10B. Balloon clubs composed of two crowns 11
- 11A. Balloon clubs <0,1 mm in length. Surface of colony papillose, due to the numerous rounded calyces. Branches cylindrical, without longitudinal lines on surface. Branching multiplanar (Figs 25–26) . . . *Eunicella papillosa*
- 11B. Balloon clubs 0,1–0,15 mm long. Surface of colony not conspicuously papillose. Branches often somewhat flattened. Surface of branches often with distinct longitudinal lines or grooves. Branching planar (Figs 22–23) *Eunicella albicans*
- 12A. Sclerites of coenenchyme are primarily capstans (*Leptogorgia* spp.) ... 13
- 12B. Coenenchymal sclerites are not capstans 17
- 13A. Branching dichotomous or lateral 14
- 13B. Branching pinnate 16
- 14A. Colony colour red-orange to wine red. Capstans 0,04–0,10 mm long (Figs 40–44) *Leptogorgia palma*
- 14B. Colony colour white or yellow. Capstans 0,06–0,17 mm long. 15
- 15A. Colony white. Capstans mainly elongate (Figs 33–35) *Leptogorgia barnardi*
- 15B. Colour yellow. Capstans mainly robust (Figs 37–38) .*Leptogorgia capensis*
- 16A. Colony colour orange, red-orange, or wine-red. Capstans 0,04–0,10 mm long (Figs 40–43) *Leptogorgia palma*

- 16B. Colony colour highly variable, usually yellow, white, pink, or mauve, rarely red. Many capstans 0,03 mm long, in addition to some larger ones up to 0,13 mm long (Figs 46–48) *Leptogorgia gilchristi*
- 17A. Many coenenchymal sclerites are wart clubs, 0,08–0,12 mm long *Rumphella* sp.
- 17B. Sclerites are not wart clubs 18
- 18A. Calyces low, indistinct or not present. Sclerites are robust tuberculated spindles, many ovoid or spheroid in shape *Euplexaura* spp.
- 18B. Calyces low or conspicuous. Sclerites predominantly thorn stars, thorn scales, rooted leaves, or coarsely tuberculate clubs and spindles 19
- 19A. Calyx sclerites are rooted leaves *Menella* sp.
- 19B. Calyx sclerites are thorn scales, thorn stars or coarsely tuberculate clubs and spindles 20
- 20A. Calyx sclerites are coarsely tuberculate clubs and spindles (Figs 20–21) *Acanthomuricea pulchra*
- 20B. Calyx sclerites are mainly thorn scales or thorn stars 21
- 21A. Many calicular sclerites are thorn scales (0,2–0,35 mm in length). Calyces not armed with thorn stars (Figs 17–18) *Astromuricea fusca*
- 21B. Calyces armed with distinct projecting thorn stars (approximately 0,4 mm in length) *Echinomuricea* spp.
- 22A. Axis jointed, composed of proteinous nodes and longer internodes of non-spicular calcium carbonate 23
- 22B. Axis continuous, not differentiated into nodes and internodes 25
- 23A. Branches arise from horny nodes *Acanella* sp.
- 23B. Branches arise from calcareous internodes 24
- 24A. Branching profuse. All polyp sclerites are scales arranged transversely (Figs 69–70) *Chathamisis ramosa*
- 24B. Branching sparse. Largest polyp sclerites are needles arranged longitudinally *Keratoisis* sp.
- 25A. Sclerites are primarily tuberculated double heads or flattened clubs 26
- 25B. Sclerites are not double heads or flattened clubs 27
- 26A. Many sclerites are flattened clubs *Junceella* sp.
- 26B. Many sclerites are double heads family *Ellisellidae*
- 27A. Colonies whip-like, unbranched 28
- 27B. Colonies sparsely or profusely branched 33
- 28A. Polyps clustered into interrupted whorls. Polyps present on all sides of the single stem *Primnoella* sp.
- 28B. Polyps arranged longitudinally along one side of colony only. A bare tract free of polyps runs longitudinally opposite the polyp-bearing side 29
- 29A. Single polyps longitudinally spaced with intervals of naked stem between each polyp *Radicipes* sp.

- 29B. Polyps arranged continuously in a longitudinal tract. Adjacent polyps close together, uninterrupted. 30
- 30A. Polyps arranged uniserially along polyp-bearing longitudinal tract (Figs 59–60) *Simpsonella squamifera*
- 30B. Polyps arranged multiserially along polyp-bearing longitudinal tract ... 31
- 31A. Colony forming a tight spiral, corkscrew-shaped. Colony bicoloured; polyps cream-white, naked tract yellow, orange, or red (Figs 56–57) *Simpsonella spiralis*
- 31B. Colony whip-like or forming a loose open spiral. Colonies cream-white or bicoloured. 32
- 32A. Many sclerites are double discs or unilaterally foliate forms (0,04–0,07 mm long) (Figs 53–54) *Simpsonella flagellata*
- 32B. Double discs or unilaterally foliate forms absent (Figs 50–51) *Simpsonella capensis*
- 33A. Sclerites are relatively smooth ovoid scales, often slightly constricted medially with both ends rounded, or sclerites absent 34
- 33B. Sclerites are broad scales or plates sometimes with one end pointed, with coarse or granular surface tuberculation covering at least one portion of the sclerite 37
- 34A. Branching planar, more or less lyrate (with secondary branches upright and parallel) or dichotomous. Polyps are arranged biserially along branches 35
- 34B. Branching pinnate (bottlebrush-like) or sympodial. Polyps arise on all sides of branches 36
- 35A. Sclerites present, sparse to numerous (Fig. 62) *Trichogorgia flexilis*
- 35B. Sclerites absent *Trichogorgia capensis*
- 36A. Branching pinnate (bottlebrush-like). Axis not zigzag-shaped *Xenogorgia sciurus*
- 36B. Branching sympodial. Axis zigzag-shaped with bronze or gold metallic iridescence *Chrysogorgia* sp.
- 37A. Branching pinnate 38
- 37B. Branching dichotomous or lyrate 39
- 38A. Branching bottlebrush-like, multiplanar. Polyps clavate, placed individually along lateral branches (Fig. 66) *Thouarella hicksoni*
- 38B. Branching planar. Polyps arranged in pairs, cylindrical and incurved *Primnoeides* sp.
- 39A. Branching lyrate. Polyps downward-facing (Fig. 63) *Narella gilchristi*
- 39B. Branching dichotomous. Polyps upward-facing 40
- 40A. Branching sparse. Polyps in whorls arranged on all sides of stem *Calyptrophora* sp.
- 40B. Branching profuse. Polyps in pairs, each placed on opposite sides of stem *Callogorgia* sp.

LIST OF GORGONIAN OCTOCORALS RECORDED FROM SOUTHERN AFRICA

Order ALCYONACEA Lamouroux, 1816; amended by Bayer, 1981

Family **Anthothelidae**

Subfamily Anthothelinae

- *Anthothela parviflora* Thomson, 1917

Subfamily Spongiodermatinae

- *Homophyton verrucosum* (Möbius, 1861)
- *Diodogorgia capensis* (Thomson, 1911)

Family **Melithaeidae**

- * *Acabaria capensis* (= *Isidella capensis* Studer, 1879) [*incertae sedis*]
- ** *Acabaria rosea* Tixier-Durivault, 1954
- *Acabaria rubra* (Esper, 1798)
- * *Acabaria valdiviae* Kükenthal, 1908
- ** *Melitodes faurii* Thomson, 1917
- ** *Melitodes grandis* Thomson, 1917
- ** *Mopsella singularis* Thomson, 1917
- * *Wrightella coccinea* Gray, 1870
- ** *Wrightella fragilis* Thomson, 1917
- ** *Wrightella furcata* Thomson, 1917
- ** *Wrightella* sp. Thomson, 1917
- * *Wrightella trilineata* Thomson, 1917

Family **Keroeidae**

- *Ideogorgia capensis* (Simpson, 1910)

Family **Acanthogorgiidae**

- ** *Acanthogorgia* spp.
- ** *Anthogorgia* sp.

Family **Plexauridae**

- ** *Echinomuricea* spp.
- ** *Euplexaura* spp.
- ** *Menella* sp.
- *Astromuricea fusca* (Thomson, 1911)
- *Acanthomuricea pulchra* (Thomson, 1911)

Family Gorgoniidae

- *Eunicella albicans* (Köl liker, 1865)
- *Eunicella papillosa* (Esper, 1797)
- *Eunicella tricornata* Velimirov, 1971
- * *Leptogorgia abietina* Kükenthal, 1919
- # *Leptogorgia africana* Thomson, 1917
- *Leptogorgia barnardi* Stiasny, 1940
- *Leptogorgia capensis* (Hickson, 1900)
- *Leptogorgia gilchristi* (Hickson, 1904)
- # *Leptogorgia luetkeni* Wright & Studer, 1889
- *Leptogorgia palma* (Pallas, 1766)
- * *Leptogorgia pusilla* Kükenthal, 1919
- # *Leptogorgia rigida* Verrill, 1868–1870
- * *Leptogorgia tenuissima* Kükenthal, 1919
- ** *Rumphella* sp.

Family Ellisellidae

- ** *Ellisellidae* spp.
- ** *Junceella* sp.

Family Chrysogorgiidae

- † *Chrysogorgia* sp.
- † *Radicipes* sp.
- *Simpsonella capensis* (Simpson, 1910)
- *Simpsonella flagellata* (Simpson, 1910)
- *Simpsonella spiralis* (Hickson, 1904)
- *Simpsonella squamifera* (Kükenthal, 1919)
- # *Trichogorgia capensis* Hickson, 1904
- *Trichogorgia flexilis* Hickson, 1904
- †* *Xenogorgia sciurus* Bayer & Muzik, 1976

Family Primnoidae

- † *Callogorgia* sp.
- † *Calyptrophora* sp.
- *Narella gilchristi* (Thomson, 1911)
- † *Primnoella* sp.
- † *Primnoeides* sp.
- *Thouarella hicksoni* Thomson, 1911

Family **Isididae**

Subfamily Keratoisidinae

† *Acanella* sp.† *Keratoisis* sp.

Subfamily Mopseinae

° *Chathamisis ramosa* (Hickson, 1904)

°—described and illustrated in the present account

*—material not available for examination.

**—material available but species not presently considered identifiable or valid.

#—material available but damaged or fragmentary and not adequate for valid determination or detailed description.

†—deep water forms (>200 m) beyond the scope of the present study and not presently identified to species.

SUMMARY AND CONCLUSION

Of the thirty genera here considered valid and known to occur in southern Africa, 17 are new records. These are *Diodogorgia*, *Anthogorgia*, *Echinomuricea*, *Menella*, *Astromuricea*, *Acanthomuricea*, *Rumphella*, *Junceella*, *Chrysogorgia*, *Radicipes*, *Callogorgia*, *Calyptrophora*, *Primnoella*, *Primnoeides*, *Chathamisis*, *Acanella*, and *Keratoisis*. Six new combinations are presented here: *Diodogorgia capensis*, *Acabaria rubra*, *Astromuricea fusca*, *Acanthomuricea pulchra*, *Leptogorgia gilchristi*, and *Narella gilchristi*.

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